United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Baker Resource Area
Vale District Office
3165 10th Street
Baker City, Oregon 97814

IN REPLY REFER TO:

OCT. 25 2002

Dear Reader:

We ask for your participation in evaluating this Lookout Mountain Forest and Rangeland Health Project Draft Environmental Impact Statement (DEIS) and proposed Resource Management Plan (RMP) amendment. We are particularly interested in comments that offer new information that would improve our analysis and suggestions for improving or clarifying our proposed management direction and/or specific management activities. Specific, rather than general comments are most useful in helping us improve our analysis and the development of our proposed activities. In order to be considered in the Lookout Mountain Forest and Rangeland Health Project Final Environmental Impact Statement (FEIS), comments must be received within the official comment period. This comment period will end 90 days after publication of the Environmental Protection Agency's Notice of Availability in the *Federal Register*. The Baker Resource Area will announce the official comment period closing date in a press release in the *Baker City Herald* and *Argus-Observer* newspapers.

All written comments should be sent to the attention of Ted Davis, Natural Resource Specialist, at the above address. Documents referenced in this DEIS may be examined at the Baker Resource Area office during the hours of 8:00am-4:30pm Monday thru Friday, except holidays.

This DEIS describes and analyzes the effects of five action alternatives and a No Action Alternative, each developed with a unique emphasis. Comments from the public, local government, Tribal governments and known interest groups, along with data collected and developed by BLM staff were considered in developing alternatives and analyzing issues in this document.

No public meetings, open houses or field tours of the project area are scheduled at this time, although such meetings, open houses or tours can be arranged if sufficient public interest exists to do so.

Comments, including names and addresses of commentors, will be available for public review. Individual respondents may request confidentiality. If you wish to withhold your name and/or address from public review or from disclosure under the Freedom of Information Act, you must state so prominently at the beginning of your written comments. These requests will be honored to the extent allowed by law. All submissions from organizations or businesses, or from individuals identifying themselves as representatives or officials or organizations or businesses, will be made available for public inspection in their entirety. This DEIS and your comments will be published on the Vale District website at www.or.blm.gov/Vale/Planning/Planning-EnvirnAnalyses.htm.

Sincerely,

Penelope Dunn Woods

Penelope Dunn Woods
Field Manager

LOOKOUT MOUNTAIN FOREST AND RANGELAND HEALTH PROJECT AND BAKER RESOURCE MANAGEMENT PLAN AMENDMENT DRAFT ENVIRONMENTAL IMPACT STATEMENT

(X) Draft Environmental Impact Statement ( ) Final Environmental Impact Statement

Department of the Interior, Bureau of Land Management

Type of Action: (X) Administrative ( ) Legislative

Abstract: This Draft Environmental Impact Statement describes and analyzes the impacts of six alternatives for managing public lands within the Lookout Mountain Analysis Area (AA) and of a Resource Management Plan (RMP) amendment concerning visual resources and the mileage of open roads in the AA. The six activity-level alternatives are designed to accomplish a variety of land management objectives, including improved forest, rangeland, riparian and wildlife habitat health, enhanced recreation opportunities and protection of cultural resources. The range of specific activities include commercial timber harvest, riparian restoration activities, road decommissionings, and fuel reduction treatments including prescribed burning. All five action alternatives would require an amendment to the Baker RMP 1) changing visual resources management (VRM) inventory classes for approximately 22,914 acres, and 2) decommissioning roads, the mileage of which varies by alternative.

Comments: Comments regarding this Draft Environmental Impact Statement are requested from all interested and/or affected agencies, organizations and individuals. In order to be considered, comments must be received within 90 days of the publication of the *Federal Register* Notice of Availability.

For additional information contact:

Ted Davis
Supervisory Natural Resources Specialist
Bureau of Land Management
Baker Resource Area
3165 10th St.
Baker City, OR 97814

LOOKOUT MOUNTAIN FOREST AND RANGELAND HEALTH PROJECT AND BAKER RESOURCE MANAGEMENT PLAN AMENDMENT DRAFT ENVIRONMENTAL IMPACT STATEMENT

Baker Resource Area Field Manager Recommendations

I recommend that the proposed Lookout Mountain Forest and Rangeland Health Project and Baker Resource Management Plan (RMP) amendment Draft Environmental Impact Statement (DEIS) be published for public and interagency review. The proposed RMP amendments would change Visual Resource Management (VRM) inventory classifications so as to more accurately reflect conditions on the ground, and would provide for the closure of roads that currently contribute large amounts of sediment to streams, thereby degrading water quality and riparian habitat in the analysis area. The proposed forest and rangeland health project would involve the implementation of various activities designed to improve the health of the sundry vegetative communities and riparian sites in the analysis area, while protecting and enhancing other values such as recreation, wildlife, cultural resources, visual resources, and soils. The project would be undertaken as a coordinated, multi-year management strategy comprised of activities that proactively address ecosystem health in a manner that is consistent with the Baker RMP. The portions of the alternatives that would amend the Baker RMP were prepared in accordance with 43 CFR 1610.5-5.

Penelope Dunn Woods

Penelope Dunn Woods, Baker Field Manager

Vale District Manager Concurrence

I concur with the recommendation to publish for public and interagency review the proposed Lookout Mountain Forest and Rangeland Health Project and Baker RMP amendment DEIS. The proposed amendment and the DEIS have been developed with appropriate public and interagency coordination.

David R. Henderson

Dave Henderson, Vale District Manager

Oregon/Washington State Director Approval to Publish the Draft Environmental Impact Statement for Public and Interagency Review

I concur that the activities and RMP amendment proposed with this document have been developed and analyzed in accordance with applicable Department of the Interior and Bureau procedures. I approve publication of the DEIS for the required 90-day public and interagency review and comment period.

Elaine M. Brong

Elaine M. Brong, Oregon/Washington State Director

Lookout Mountain Forest and Rangeland Health Project Draft Environmental Impact Statement

Summary

Introduction

The Lookout Mountain Forest and Rangeland Health Project Draft Environmental Impact Statement (DEIS) addresses options for the management of approximately 25,160 acres of Bureau of Land Management (BLM)-managed land along the Snake River southeast of Baker City, Oregon. This land is located in Baker County, and is managed by the BLM Baker Resource Area. The DEIS considers nine primary issues and analyzes how five action alternatives and a no-action alternative would address these issues. The alternatives represent different combinations of land management activities designed to achieve the desired results of improved forest and rangeland health. Subsidiary goals, such as improved riparian conditions and the maintenance of high-quality recreational opportunities, also are considered.

The DEIS also discusses the BLM's proposal to amend its Resource Management Plan (RMP), which guides management in the Baker Resource Area, so as to change some Visual Resource Management (VRM) classifications on the land in question. The document also contains an analysis of the potential environmental effects of this proposed amendment.

Upon the closing of the 90-day public comment period on the Lookout Mountain Forest and Rangeland Health Project DEIS, the BLM will analyze all comments and then publish a Final Environmental Impact Statement (FEIS) and, potentially, an RMP amendment. Interested members of the public, as well as government and Tribal officials will be furnished with a copy of the proposed plan and will have an opportunity to protest decisions they believe are adverse to their interests. Following the resolution of all protests, a Record of Decision (ROD) will be issued along with the approved plan and, if applicable, the RMP amendment. It should be noted that any timber sale authorized under the approved plan will not be protestable at the time of the issuance of the ROD, but rather when said timber sale is advertised.

The approved plan will authorize management activities that the BLM will commence following the issuance of the ROD. These activities, as currently envisioned, are set forth and described in the body of the DEIS, subject to finalization in the FEIS in light of any public comments received. The attached summary table also provides brief descriptions of the planned activities and their environmental impacts. The RMP amendment, if approved, will replace the VRM classifications set forth in the RMP, thereby affecting visual resource management inventory and objectives.

The following brief overview of the DEIS will assist you in reviewing and understanding the document and the proposed activities.

Chapter 1.0. Purpose and Need

Forested land in the Analysis Area (AA) has suffered declining health as a result of dense stand conditions, insect and disease outbreaks, juniper encroachment and the lack of fire-induced growth stimulation. Thinning of dense stands would permit the entry of light and air

into these stands, and is needed to stimulate healthy growth of retained trees. Thinned stands would more closely resemble the open park-like stands that historically were found in the area prior to the elimination of wildfire as an agent of ecological change. Thinning also would remove fuels that currently contribute to a high risk of catastrophic stand replacement wildfire. Under thinning operations, large trees would be retained, which would promote the development of snags and course woody debris, which is important for wildlife.

Many stands in the AA bear high levels of dwarf mistletoe infestation. Dwarf mistletoe is a parasite that weakens trees, particularly Douglas-fir, and makes them more susceptible to attack by bark beetles. Trees attacked by beetles generally die and become fuel. In order to minimize this possibility, stands characterized by high levels of mistletoe infestation must be treated so as to remove infected trees either altogether or in clumps, with retained infected trees isolated from retained uninfected trees.

With the exclusion of fire, the number of juniper trees in the AA has risen dramatically, and these trees now occupy areas in which historically they never were found. Juniper trees frequently crowd out more desirable tree species and eliminate herbaceous ground cover by aggressively competing for resources. Of particular concern is juniper encroachment into aspen stands, which present unique visual and habitat resources. The removal of juniper is essential for the preservation of several aspen stands in the AA, as well as many other sites characterized by other vegetative associations, and this removal is contemplated under the action alternatives analyzed in the DEIS.

High fuel loadings in the AA present a high risk of catastrophic fire and consequent losses of valuable resources. A federal fire policy adopted in 1995 (USDA 1995) directed federal land managers to expand the use of prescribed fire to reduce fuel loads and to restore and maintain healthy ecosystems. Reintroducing fire into the AA by prescription would help accomplish these goals, and prescribed burns would be implemented under any of the analyzed alternatives.

Rangeland in the AA has suffered from overutilization, invasion by noxious weeds, and juniper encroachment. Rangeland treatments such as prescribed burning, exclosure construction, fencing and the implementation of Rangeland Standards & Guides, all of which would be done under all action alternatives, would help restore the health of the range ecosystem.

The AA contains riparian areas, many of which have been degraded and now are in poor condition. Riparian treatments such as the placement of large woody debris, which would promote pooling and reduce sedimentation, would improve riparian health.

VRM inventory and management objective classifications were delineated in the RMP in 1989. Subsequent analysis indicated that these classifications do not entirely reflect on-the-ground conditions. The DEIS sets forth the proposal that the RMP be amended with regard to VRM classifications, so that these classifications more accurately reflect actual conditions within the AA.

Chapter 2.0. Alternatives

The DEIS describes five action alternatives and a no-action alternative to be implemented over the next decade. Each action alternative is a reasonable means by which to promote ecosystem health, although each bears a different management emphasis, as described below. Each alternative and its environmental impacts are described in Table 1. Under all action alternatives, the inventory and management objective VRM class structure would be changed from Class II to a mix of Classes II, III and IV so as to better reflect conditions on the ground. The change is proposed because the VRM classes delineated at the time of the signing of the RMP ROD (1989) inaccurately described the entire AA as Class II. With more in-depth visual

resource analysis and improved mapping technology, it has been discovered in more recent years that actual VRM Classes in the AA range from Class II to Class IV. Approximately 40% of what originally was designated as Class II will remain such, with approximately 20% being changed to Class III and about 40% being changed to Class IV. It should be noted that the change in VRM Classes will require an RMP Amendment. The decision on this particular issue rests with the BLM Oregon State Director.

Other activities that would require the amendment of the Baker RMP, and hence a decision from the BLM Oregon State Director, are the closure of roads and Off-Highway Vehicle trails. The road mileage subject to closure is set forth in the description and tables for each alternative.

No Action Alternative

Under the No Action Alternative, routine management actions would occur in the AA in accordance with guidelines set forth in the RMP. No major federal actions would take place on BLM-administered land in the AA without first being subject to the proper level of National Environmental Policy Act (NEPA) analysis. Such federal actions would include timber sales, fuels treatments, and riparian restoration. The No Action Alternative is required by NEPA, and sets forth a baseline against which the other alternatives may be compared.

Alternative 1

This alternative is designed to maintain and enhance Douglas-fir and mountain shrub communities. It involves the second most timber harvesting of the action alternatives, in addition to aggressive thinning of juniper and a substantial amount of prescribed burning. Mistletoe-infested stands would heavily treated with thinning and regeneration harvest. Alternative 1 does not proactively address aspen health, would retain the highest mileage of open roads, and provides for the least number of riparian miles restored and of all alternatives.

Alternative 2 (Preferred Alternative)

This alternative even-handedly addresses health issues for the various Lookout Mountain ecosystems; it would treat overstocked and mistletoe-infested Douglas-fir stands through thinning, patch cuts and regeneration cuts, all while maintaining selected areas of big game thermal and hiding cover. It would reduce fuel levels through harvesting and prescribed burning, and would improve the health of mountain shrub communities and enhance aspen stands by removing competing overstory vegetation and aggressively thinning juniper. Of all action alternatives, Alternative 2 would retain the second lowest mileage of open roads, and would entail the second highest mileage of riparian restoration.

Alternative 3

This alternative is the most proactive of all the alternatives, designed to convert selected Douglas-fir stands to mountain shrub communities with a scattered Douglas-fir overstory. Alternative 3 would involve the most timber harvest of the various alternatives, as well as the highest acreage of non-harvest treatments, including prescribed burning. Mistletoe would be removed from currently heavily infested stands by thinning, regeneration harvests and patch cuts. Juniper would be thinned aggressively from mountain shrub, aspen and other communities, and more acres of aspen would treated than under any other alternative. Alternative 3 would retain the second highest mileage of open roads, and would entail the highest mileage of riparian restoration.

Alternative 4

Alternative 4 was designed primarily to address wildlife needs. Accordingly, this alternative minimizes commercial harvest activities and non-harvest treatments, although some harvesting and other activities would occur. Mistletoe infestation is not substantially addressed. Because vegetative treatments would be light-handed in order to maintain big game cover and address other species' habitat requirements, fuel reduction would not be as dramatic as under the other action alternatives. Nonetheless, extensive aspen treatments would improve the health of aspen stands. Juniper would be aggressively thinned, and prescribed range burns would enhance grassland/sagebrush and mountain shrub communities. Unlike the other alternatives, Alternative 4 proposes the construction of no new roads, and would entail the closure of more road miles than under any other alternative. This alternative also provides for the second highest mileage of riparian restoration.

Alternative 5

Alternative 5 was developed with voluntary consideration of the Draft Interior Columbia Basin Ecosystem Management Project (ICBEMP) science regarding old forest definitions and objectives as well as riparian buffers. Generally, the alternative is designed to thin and improve the health of overstocked Douglas-fir stands, maintain selected areas of big game cover, enhance selected areas of mountain shrub communities and to improve aspen stand health. Mistletoe infestation would be reduced by thinning, and regeneration and patch cuts. In all, this alternative would entail harvest and non-harvest forest health treatments (including prescribed burning) on

the second fewest acres of all action alternatives. Alternative 5 would retain the second lowest mileage of open roads, and would provide for the second highest mileage of riparian restoration.

Chapter 3.0. Affected Environment

Chapter 3 presents an overview of the Analysis Area, and describes the existing situation for the various resource components of that Area, such as vegetation, riparian habitat and cultural resources, that may be affected by the proposed activities.

Chapter 4.0. Environmental Consequences

Chapter 4 discusses the various environmental consequences of each alternative.

Table 1. Alternative Summary

RESOURCE	ALTERNATIVE 1 (Douglas-fir)	ALTERNATIVE 2 (Preferred Alternative)	ALTERNATIVE 3 (Aspen/Shrub)	ALTERNATIVE 4 (Wildlife)	ALTERNATIVE 5 (ICBEMP/Old Forest)	NO ACTION ALTERNATIVE
Forest/ Woodland/ Mountain Shrub Communities	**Descriptions**					
	Enhance or maintain Douglas-fir stands through commercial timber harvesting (2287 acres), prescribed fire and planting. Enhance mountain shrub communities through overstory reduction and prescribed burning on 1255 acres. Aggressively thin juniper on 642 acres. This alternative does not address aspen health proactively. Harvest timber on 357 of 885 of old forest (40%).	Enhance or maintain Douglas-fir stands as in Alt. 1 (1885 acres of timber harvesting). Enhance mountain shrub communities as in Alt. 1 (869 acres). Aggressively thin juniper from 595 acres. Enhance aspen stands by removing competing overstory vegetation on 526 acres. Harvest timber on 243 of 885 acres of old forest (27%).	Convert selected Douglas-fir stands to mountain shrub communities (2509 acres of timber harvesting). Enhance existing mountain shrub communities as in Alt. 1 (1263 acres). Aggressively thin juniper on 642 acres. Enhance aspen stands as in Alt. 2 (622 acres). Harvest timber on 522 acres of 885 acres of old forest (59%).	Minimize commercial harvest while enhancing wildlife opportunities. Harvest timber on 773 acres. Enhance mountain shrub communities as in Alt. 1 (342 acres). Aggressively thin juniper on 590 acres. Enhance aspen stands as in Alt. 2 (540 acres). Harvest timber on 107 of 885 acres of old forest (12%).	Enhance or maintain Douglas-fir stands as in Alt. 1 (1501 acres of timber harvesting). Enhance mountain shrub communities as in Alt. 1 (725 acres). Aggressively thin juniper on 518 acres. Enhance aspen stands as in Alt. 2 (438 acres). No timber harvest in classified old forests.	Forest stand stocking levels would not be reduced, although forest health would continue to be monitored and minimally managed. Fire would not be re-introduced as a controlled agent of ecosystem management. Juniper would not be cut, and mountain shrub and aspen communities would not be enhanced.
	Impacts					
	Mistletoe infection and insect infestation would be reduced on the second highest acreage of all alternatives, thereby decreasing tree mortality and easing accumulations of fuel. Stand structure would change dramatically through harvesting. Juniper encroachment also would be reduced, which would help improve rangeland vegetation and prevent additional soil impacts. Mountain shrub communities would increase in vigor. Aspen stand health would continue to decline.	Generally the same as Alt. 1, but with less reduction of mistletoe infection and insect infestation (see acreage above). Further, aspen treatments would result in the increased extent and vigor of aspen clones.	Generally the same as Alt. 2, but with much greater reduction of mistletoe infection and insect infestation (see acreage above).	Limited harvest would not remove mistletoe infection or insect infestation as effectively as the other action alternatives. Stand structure would not change dramatically, but would be tailored to the needs of wildlife. Juniper encroachment would be reduced as in Alt. 1. About one quarter of the existent mountain shrub communities would increase in vigor. Aspen clones would increase in extent and vigor.	Generally the same as Alt. 2, but with less reduction of mistletoe infection and insect infestation (see acreage above).	Stand conditions would continue to degrade for all vegetation types due to crowding, shading, and increased mistletoe infection and insect infestation. Douglas-fir would continue to encroach upon mountain shrub and aspen communities. Juniper would continue to squeeze out other, more desirable forms of vegetation, resulting in negative soil impacts.

Table 1. Alternative Summary

RESOURCE	ALTERNATIVE 1 (Douglas-fir)	ALTERNATIVE 2 (Preferred Alternative)	ALTERNATIVE 3 (Aspen/Shrub)	ALTERNATIVE 4 (Wildlife)	ALTERNATIVE 5 (ICBEMP/Old Forest)	NO ACTION ALTERNATIVE
	Descriptions					
Rangeland	Perform range treatments as quickly as possible and adjust grazing schedules so as to minimize effects on grazing permittees. Exclude livestock from treatment areas for 2-5 years following treatment. Implement grazing utilization standards and Rangeland Standards & Guides. Prescribed range burns - 1300 acres; Fencing - 6.5 miles	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1, and the following: Plant perennials along the Snake River and in prescribed burn areas so as to enhance deer and elk winter range forage. Plant riparian shrubs in order to provide cover for wildlife.	Same as Alt. 1	Implement Rangeland Standards & Guides, which may entail changes to season of use, AUMs, grazing systems, and forage utilization.
	Impacts					
	Reintroduction of fire would improve rangeland vegetation, and sagebrush and juniper would be reduced to normal levels. The reduction of juniper would result in increased ground cover which, in turn, would foster soil benefits such as reduced erosion and greater infiltration. Exclusion of livestock from treatment areas for 2-5 years would impact permittees by compelling them to find other resources for their livestock. This impact would be mitigated to the extent possible.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1	No direct impacts to rangeland would be created. Rangeland vegetation would continue to degrade, and range sites would produce progressively lower quality forage for livestock. Implementation of Rangeland Standards & Guides would help minimize these impacts.

Table 1. Alternative Summary

RESOURCE	ALTERNATIVE 1 (Douglas-fir)	ALTERNATIVE 2 (Preferred Alternative)	ALTERNATIVE 3 (Aspen/Shrub)	ALTERNATIVE 4 (Wildlife)	ALTERNATIVE 5 (ICBEMP/Old Forest)	NO ACTION ALTERNATIVE
	Descriptions					
Riparian Areas/ Fisheries	Restore riparian areas through large woody debris (LWD) placement and riparian planting along 11.4 miles of stream. Monitor and inventory habitats. Exclude livestock where necessary to protect riparian areas. Delay harvest on 405 acres until riparian restoration can bear effects.	Restore riparian areas as in Alt. 1, and through noxious weed treatments and seeding along 19.3 miles of stream. Monitor and inventory habitats. Exclude livestock where necessary to protect riparian areas. Institute streamside buffers to protect water quality.	Same as Alt. 2, except treatments extend along 20.6 miles of stream.	Same as Alt. 2	Same as Alt. 2	Address riparian areas and fisheries as per the Baker RMP, as funding and staffing permit. Monitor and inventory habitats. Exlcude livestock where necessary to protect riparian areas.
	Impacts					
	Because this alternative entails the highest acreage of mistletoe treatments and ground harvest methods, it carries the greatest risk of hydrologic effects (e.g., increased sedimentation, changes in base and peak flows) and impacts to fisheries. Loss of aspen would reduce streambank stability and water quality in areas not subsequently planted with hardwoods. About 36 miles of stream in need of restoration would not be restored, and heavy erosion and water quality effects would continue. Delayed harvest would mitigate riparian effects on the most acreage of all action alternatives.	This alternative entails modest acreage of mistletoe treatments, and fewer ground harvest method acres than Alternative 1, fewer hydrologic effects and impacts to fisheries would be expected. Enhancement of aspen would increase streambank stability and shade. About 28.1 miles of stream in need of restoration would not be restored, and heavy erosion and water quality effects would continue in those areas. The use of riparian buffers would minimize negative effects to streams. Delayed harvest would mitigate riparian effects on about half the acreage as Alternative 1.	No mistletoe treatments are planned under this Alternative, although the highest harvest acreage of all alternatives and a significant amount of ground harvesting would result in potentially severe hydrologic effects and impacts to fisheries. These effects would be mitigated somewhat by the use of riparian buffers. Aspen treatments would increase streambank stability and shade. While this alternative entails the highest mileage of streambank restoration, 26.8 miles of stream would be unrestored. Delayed harvest would mitigate effects on about 3/4 of the acreage as Alternative 1.	Same as Alt. 2	Same as Alt. 2	The continued degradation of forest health and consequent tree mortality would result in decreased streambank stability and increased water temperatures. Over time, natural processes would restore riparian areas and stream function. Implementation of Rangeland Standards & Guides would aid in the protection of riparian areas.

Table 1. Alternative Summary

RESOURCE	ALTERNATIVE 1 (Douglas-fir)	ALTERNATIVE 2 (Preferred Alternative)	ALTERNATIVE 3 (Aspen/Shrub)	ALTERNATIVE 4 (Wildlife)	ALTERNATIVE 5 (ICBEMP/Old Forest)	NO ACTION ALTERNATIVE
	Descriptions					
Wildlife	Retain 5-10 large down logs per acre. Retain at least 3 snags per acre, and manage for a 60% cavity excavator population level. Continue surveys for northern goshawks and wintering bald eagles. Designate Post-fledgling Family Areas (PFAs) of at least 400 acres around each active northern goshawk nest site. Other species of wildlife observed in the area would be recorded through incidental observation reports.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1, and the following: Maintain 50-75% of upland sagebrush communities in Class "A" sage grouse nesting habitat condition. Promote eagle habitat by planting roosting trees along the Snake River. Maintain at least 26 trees per acre throughout treatment areas. Manage for at least an 84% cavity excavator population level. Enhance thermal and hiding cover for big game wildlife.	Same as Alt. 1	Basic inventories for specific wildlife species would be continued on a yearly basis. Northern goshawk surveys would be conducted each year to determine occupancy and nesting success. Other species of wildlife observed in the area would be recorded through incidental observation reports.
	Impacts					
	Forest treatments would reduce effective thermal cover for big game by 63%. Though this impact would be long-term, it is not critical because forage, not cover, is the main limiting factor in the area. Hiding cover would be reduced by 81% in the short term. Prescribed fire would affect wildlife in the short term through physical disturbance, and cover and forage destruction. Long term forage production on 3000 acres would increase. Goshawk habitat would be lost in the short term, but would increase in quantity and quality in the long term. Sage grouse habitat would be reduced by a negligible 2%.	Same as Alt. 1, with the following differences: Long-term thermal cover reduction by 45%. Hiding cover reduction by 82%. Long-term increased forage production on 3200 acres. About 15% less goshawk habitat would be lost in the short term. Aspen treatments would increase the amount of foraging habitat for big game wildlife, and would increase habitat and wildlife diversity in the AA.	Same as Alt. 1, with the following differences: Long-term thermal cover reduction by 66%. Hiding cover reduction by 88%. Long-term increased forage production on 4250 acres. About 3% more goshawk habitat would be lost in the short term. Aspen treatments would increase the amount of foraging habitat for big game wildlife, and would increase habitat and wildlife diversity in the AA.	No forest treatments would reduce effective thermal cover for big game wildlife. Hiding cover would be maintained along open roads in the AA. Failure to treat mistletoe-infected stands would result in long-term habitat loss. More road closure miles would result in more unbisected habitat for all wildlife. Prescribed fire effects would be the same as under the other action alternatives, though long-term increased forage would be limited to 1900 acres. About 41% less goshawk habitat would be lost than under Alt. 1. Aspen treatment effects would be the same as under Alt. 2. No effects to sage grouse.	Same as Alt. 1, with the following differences: Long-term thermal cover reduction by 40%. Hiding cover reduction by 70%. Long-term increased forage production on 2600 acres. About 23% less goshawk habitat would be lost in the short term. Aspen treatments would increase the amount of foraging habitat for big game wildlife, and would increase habitat and wildlife diversity in the AA.	No direct effects to wildlife would be created. Habitat would continue to develop naturally. Increasing fuel loads eventually likely would result in a catastrophic wildfire, which would severely impact wildlife and wildlife habitat. Continued tree mortality would effect species like the northern goshawk, which relies upon live trees.

Table 1. Alternative Summary

RESOURCE	ALTERNATIVE 1 (Douglas-fir)	ALTERNATIVE 2 (Preferred Alternative)	ALTERNATIVE 3 (Aspen/Shrub)	ALTERNATIVE 4 (Wildlife)	ALTERNATIVE 5 (ICBEMP/Old Forest)	NO ACTION ALTERNATIVE
	Descriptions					
Road	Temp. use of closed roads - 1.3 miles; Decom. existing roads - 2.5 miles (road closures would require approval from the BLM State Director; New permanent roads - 4.2 miles; Improvements to existing roads - 4.4 miles; Total open roads - 83.4 miles; Maintain roads on a 3-year cycle.	Temp. use of closed roads - 1.3 miles; Decom. existing roads - 5.8 miles; New permanent roads - 3.8 miles; Improvements to existing roads - 7.9 miles; Total open roads - 80.1 miles; Maintain roads on a 3-year cycle.	Temp. use of closed roads - 1.3 miles; Decom. existing roads - 2.1 miles; New permanent roads - 3.4 miles; Improvements to existing roads - 4.4 miles; Total open roads - 82.4 miles; Maintain roads on a 3-year cycle.	Temp. use of closed roads - none; Decom. existing roads - 10.7 miles; New permanent roads - none; Improvements to existing roads - none; Total open roads - 72.4 miles; Maintain roads on a 3-year cycle.	Same as Alt. 2	Maintain the Lookout Mountain and Morgan Creek roads annually. Maintain other roads as necessary.
	Impacts					
	Roads not improved or decommissioned would continue to cause sediment-related impacts to fish habitat, water quality and riparian areas. Road impacts on wildlife, based mainly upon physical disturbance, would be low-moderate. All new permanent roads potentially would impact visual quality. Decommissioning roads would negatively impact some recreators, such as OHV users. See mileages above for comparison between the alternatives.	Same general effects as under Alt. 1, with differences relating only to the extent of the effects, which is based upon mileages. These mileage figures are set forth above.	Same general effects as under Alt. 1, with differences relating only to the extent of the effects, which is based upon mileages. These mileage figures are set forth above.	Same general effects as under Alt. 1, with differences relating only to the extent of the effects, which is based upon mileages. These mileage figures are set forth above.	Same general effects as under Alt. 1, with differences relating only to the extent of the effects, which is based upon mileages. These mileage figures are set forth above.	Road degradation would continue, and eroding roads would continue delivering sediment to streams, thereby impacting water quality and fish habitat.

Table 1. Alternative Summary

RESOURCE	ALTERNATIVE 1 (Douglas-fir)	ALTERNATIVE 2 (Preferred Alternative)	ALTERNATIVE 3 (Aspen/Shrub)	ALTERNATIVE 4 (Wildlife)	ALTERNATIVE 5 (ICBEMP/Old Forest)	NO ACTION ALTERNATIVE
	Descriptions					
Fire/Fuel	Treatments would reduce fuel loadings from a Fuel Model 10 to a Fuel Model 8. Prescribed fire - 4836 acres	Same as Alt. 1, except: Prescribed fire - 3871 acres	Same as Alt. 1, except: Prescribed fire - 5031 acres	Same as Alt. 1, except: Prescribed fire - 2542 acres	Same as Alt. 1, except: Prescribed fire - 3404 acres	No fuels reduction or removal projects would be implemented.
	Impacts					
	Prescribed burning may result in increased erosion in the short term. This, in turn, may cause elevated runoff and sedimentation to streams. Reduction of fuel loadings would reduce the risk of catastrophic wildfires. See mileages above for comparison between the alternatives.	Same general effects as under Alt. 1, with differences relating only to the extent of the effects, which is based upon acreages. These acreage figures are set forth above.	Same general effects as under Alt. 1, with differences relating only to the extent of the effects, which is based upon acreages. These acreage figures are set forth above.	Same general effects as under Alt. 1, with differences relating only to the extent of the effects, which is based upon acreages. These acreage figures are set forth above.	Same general effects as under Alt. 1, with differences relating only to the extent of the effects, which is based upon acreages. These acreage figures are set forth above.	Without the removal of existing fuels, and with the accumulation of additional fuels due to degrading stand conditions and increasing tree mortality, fuel loadings would continue to grow. The risk of a catastrophic stand replacement wildfire would increase dramatically.

Table 1. Alternative Summary

RESOURCE	ALTERNATIVE 1 (Douglas-fir)	ALTERNATIVE 2 (Preferred Alternative)	ALTERNATIVE 3 (Aspen/Shrub)	ALTERNATIVE 4 (Wildlife)	ALTERNATIVE 5 (ICBEMP/Old Forest)	NO ACTION ALTERNATIVE
	Descriptions					
Cultural Resource	Buffer cultural resource sites during treatments so as to prevent disturbance. Inventory, monitor and protect sites from ungulate trampling following treatments. Aspen trees with historic inscriptions would not be felled. Erect signs encouraging protection of cultural resources at various places in the Analysis Area. Follow all federal and state direction for the protection of cultural sites.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1	Previously observed impacts to cultural resources would continue. Implementation of Rangeland Standards & Guides would help protect cultural resources by limiting trampling.
	Impacts					
	Shrub and riparian treatments would reduce the effects of erosion on cultural resources. Prescribed fire, which would help preclude a future stand replacement fire, would benefit these resources. A 0.3-mile segment of historic logging wagon road would be modified. In general, protection of cultural resources would improve as a result of this project.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1, although modification of a slightly smaller segment of the historic logging wagon road would be necessary.	Failure to institute new protections for cultural resources would result in continued impacts to these resources.

Table 1. Alternative Summary

RESOURCE	ALTERNATIVE 1 (Douglas-fir)	ALTERNATIVE 2 (Preferred Alternative)	ALTERNATIVE 3 (Aspen/Shrub)	ALTERNATIVE 4 (Wildlife)	ALTERNATIVE 5 (ICBEMP/Old Forest)	NO ACTION ALTERNATIVE
	Descriptions					
Recreation	Site treatments so as not to impact recreation in the long term. Do not undertake prescribed burns in the immediate vicinity of established campsites. Minimize log hauling through Bassar Diggens during critical recreation times. Improve the Bassar Diggens site as funding becomes available.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1	Currently occurring recreation would be expected to continue. Improvements to recreational facilities would not be made, and maintenance of those facilities would be done as needed.
	Impacts					
	Timber harvest, prescribed burning, road construction and road closure would effect recreators in both positive and negative ways for differing periods of time. Generally, the more acreage subject to heavy and long-lasting treatment such as mistletoe treatment, the greater the negative impacts. See treatment acres and road closure figures, etc., for comparison between alternatives. In general, recreation resources will be protected and improved under all action alternatives.	Same general effects as under Alt. 1, with differences relating to the extent of the effects, which is based upon treatment acreages and mileages. These figures are set forth above. Also, aspen treatments would enhance recreation resources by diversifying habitat and improving fall sightseeing opportunities.	Same general effects as under Alt. 1, with differences relating to the extent of the effects, which is based upon treatment acreages and mileages. These figures are set forth above. Also, aspen treatments would enhance recreation resources by diversifying habitat and improving fall sightseeing opportunities.	Same general effects as under Alt. 1, with differences relating to the extent of the effects, which is based upon treatment acreages and mileages. These figures are set forth above. Also, aspen treatments would enhance recreation resources by diversifying habitat and improving fall sightseeing opportunities.	Same general effects as under Alt. 1, with differences relating to the extent of the effects, which is based upon treatment acreages and mileages. These figures are set forth above. Also, aspen treatments would enhance recreation resources by diversifying habitat and improving fall sightseeing opportunities.	No direct impacts to recreation would be created. Continued forest health degradation would change wildlife habitat and, as a result, hunting opportunities also would change. Contiguous swaths of dead vegetation would severely affect recreators. Aspen would continue to be suppressed, and fall viewing color would suffer.

Table 1. Alternative Summary

RESOURCE	ALTERNATIVE 1 (Douglas-fir)	ALTERNATIVE 2 (Preferred Alternative)	ALTERNATIVE 3 (Aspen/Shrub)	ALTERNATIVE 4 (Wildlife)	ALTERNATIVE 5 (ICBEMP/Old Forest)	NO ACTION ALTERNATIVE
Visual Resource	**Descriptions**					
	Visual Resource Management (VRM) inventory and management objective categories would change from Class II to a mix of Classes II, III and IV to more accurately reflect on-the-ground conditions. Treatments would be sited and designed to minimize visual impacts. This would require approval from the BLM State Director.	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1	Same as Alt. 1	VRM inventory and management objective categories would remain Class II.
	Impacts					
	Impacts to visual resources are defined as management actions that alter existing landscapes, thereby affecting scenic quality. Timber management actions and road construction typically affect scenic quality. Heavy-handed forest health and other treatments such as mistletoe treatments affect visual resources most, while prescriptions that retain the greatest amount of canopy generally have the least impact. Differences in impacts between the alternatives are based upon acreage of treatments and road construction mileage, as set forth above. See these figures for comparison between the alternatives. All adverse effects to visual resources would be short-term; over time, visual quality would be restored.	Same general effects as under Alt. 1, with differences relating to the extent of the effects, which is based upon treatment acreages and mileages.	Same general effects as under Alt. 1, with differences relating to the extent of the effects, which is based upon treatment acreages and mileages.	Same general effects as under Alt. 1, with differences relating to the extent of the effects, which is based upon treatment acreages and mileages.	Same general effects as under Alt. 1, with differences relating to the extent of the effects, which is based upon treatment acreages and mileages.	Failure to proactively address forest health would result in the continued degradation of all types of vegetative communities. Viewsheds would be impacted by this degradation and by the eventual stand replacement wildfire.

The following table outlines the treatments proposed under all five action alternatives:

Table 2. Comparison of Alternatives

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Non-Harvest Treatment Type (acres)					
Mountain Shrub-no harvest	817	476	823	307	406
Aspen-no harvest	0	347	399	348	290
Juniper	642	595	642	590	518
Prescribed fire	244	142	211		138
range burns	1300	1300	1300	1300	1300
Total	3003	2860	3375	2545	2652
Timber Harvest type (acres)					
PFA	120	120	120	120	120
Mt Shrub	437	393	440	35	319
aspen		179	223	191	148
thin	822	447			516
thin/mistletoe	304	250			157
thin/mistletoe/aspen		125			92
mistletoe	604	180			14
patch mistletoe		191			135
immature			1089		
mature			637		
isolated parcels				154	
marginal treat				169	
satisfactory treat				104	
Total	2287	1885	2509	773	1501
Prescribed Fire Acres	4836	3968	5031	2542	3471
Roads (miles)					
temp use of closed road	1.3	1.3	1.3	0.0	1.3
decommission exist road	5.1	6.0	6.2	13.6	5.8
new perm road	2.8	2.8	2.8	0	3.8
new temp road	1.4	1.4	0.6	0	1.4
existing road imp	10.0	7.9	6.8	3.2	7.9
Grand Total Open	86.9	80.1	82.5	72.4	80.1
New fence const (miles)	6.5	6.5	6.5	6.5	6.5
Riparian Restoration Treatments (miles)					
LWD_RIP	10.7	16.2	16.2	16.2	16.2
RIP Only	0.7	13.8	8.9	13.8	13.8
Noxious Weed		7.7	0.9	7.7	7.7
Seed		6.2	11.2	6.2	6.2
LWD/RCA-RHCA		3.5	2.5	3.5	3.5
Grand Total	11.4	19.3	20.6	19.3	19.3
Existing Vegetation Types (forest land and other) (acres)					
shrub/hdwd	2154				
aspen	827				
juniper	1876				
immature	1752				
mature	290				
old forest	885				
TOTAL	7784				

LOOKOUT MOUNTAIN
FOREST AND RANGELAND HEALTH PROJECT
Draft Environmental Impact Statement

July 2002

TABLE OF CONTENTS

Appendices

List of Tables

Looking east from the Lookout Mountain Road

1.0 Purpose and Need

1.1 Introduction

This Draft Environmental Impact Statement/RMP Amendment (DEIS/RMPA) assesses five action alternatives for improving the health of the forests and rangelands within the Lookout Mountain Analysis Area (AA)[1], while maintaining or enhancing riparian ecosystems, aspen communities, wildlife habitat, visual resources, and water quality. The underlying need and the purpose for developing this DEIS are described in Chapter 1 and summarized below. This document also proposes to amend the current Visual Resource Management (VRM) classification in the AA as designated in the Bureau of Land Management (BLM) Baker RMP. The justification for proposing an RMP amendment for VRM classification is also described in Chapter 1 and summarized below.

The selected alternative would improve the overall health of the forested ecosystems within the AA by selectively harvesting trees to minimize the potential for mistletoe and insect infestation and catastrophic wildfire. Riparian enhancement projects will be performed to improve habitat in riparian corridors within the AA. Prescribed fire, fencing, and thinning may be developed to enhance aspen communities in the area where years of fire suppression, logging, and livestock and wildlife utilization have stifled the regeneration of aspen in the AA. Western juniper encroachment would be controlled by the removal of juniper trees in specific areas. Prescribed fire would be used to improve range conditions and restore native perennial vegetation.

The Baker RMP was developed in 1989 and since has been the driving document for

[1] This document will refer to both the Lookout Mountain Analysis Area (AA) and the Lookout Mountain Geographic Unit (GU). The GU is a specific parcel of land delineated in the Baker Resource Management Plan (RMP). The AA is a designation that includes a portion of the GU and other surrounding areas that potentially could be affected by land management activities envisioned under this document.

managing resources on BLM-administered land in the Baker Resource Area. This proposed DEIS/RMPA has been developed in accordance with the BLM planning regulations issued under authority of the Federal Land Policy and Management Act (FLPMA) and written in accordance with the Council on Environmental Quality (CEQ) regulations regarding the National Environmental Policy Act (NEPA). A team of natural resource specialists called the Lookout Mountain Interdisciplinary Team (IDT) was formed by the Baker Field Office to develop alternatives and analyze impacts associated with these alternatives. This team consisted of professionals in the following disciplines: forestry, wildlife, fisheries, range, hydrology, botany, noxious weeds, recreation/visual resources and fire/fuels.

This DEIS/RMPA proposes to re-designate Visual Resource Management (VRM) classifications on approximately 16,600 acres of BLM-administered land in the Lookout Mountain area. Currently, VRM inventory and management objective classifications for the entire AA are Class II (as described herein). Because the original inventory classification was designated using a "broad-brush" method without in-depth visual analysis when the Baker RMP first was developed, it does not accurately reflect on-the-ground conditions. A subsequent visual resources inventory was conducted during July/August 1999, and new classifications based upon that in-depth study with new geographic information technology would better reflect actual conditions. This DEIS will analyze the impacts of the proposed change of classification.

1.2 Purpose of and Need for Action

The proposed actions are intended to bring the ecological functions of the AA into balance and to maintain healthy forested and rangeland ecosystems, productive riparian areas, and vigorous regenerated aspen communities for the public to enjoy and appreciate. The purpose for the proposed forest health actions is to increase tree vigor and reduce mistletoe infection, the incidence of insect infestation, and the potential for stand replacing fire. The purpose for the riparian improvement projects is to improve water quality, enhance the productivity of the riparian areas, and to improve habitat for fish and wildlife. The purpose for the aspen stand enhancement projects is to improve the health of the aspen communities in the AA, to provide unique habitat qualities for wildlife and to augment the visual resource by providing fall color contrasts. The purpose of the juniper treatments is to reduce the impacts of juniper encroachment on aspen, riparian and grass/sagebrush habitat areas.

The current VRM inventory and management objective classifications for the entire AA is Class II. The purpose for the proposed change in VRM Classification for the AA is to refine these classifications so that they more closely depict actual visual resource conditions. The previous classifications delineated in the RMP Record of Decision (ROD)(1989) used a "broad-brush" designation method despite the fact that the variable nature of visual resource conditions in the AA merit more specific and varied designation. Recent VRM inventories using more advanced technology and methods than were available prior to the signing of the ROD have shown that a diverse mix of VRM classifications exists in the AA, and the Baker Resource Area RMP should be amended accordingly. This DEIS will analyze the impacts of the proposed VRM classification change.

Douglas-fir stands in the AA are highly infested with dwarf mistletoe and, in most cases, are much more dense than would be expected under the natural range of variability. This extreme condition lends itself to increased insect infestation and catastrophic fire risk. Historically, fire acted as a natural thinning and stand replacement agent in this area. Because fire has been excluded as an agent of stand maintenance, many of the forest stands have accumulated high fuel loads have developed a dense understory of small young trees. Further, the stands have heavy mistletoe infection and insect infestation levels, which have resulted in increased tree mortality. Unaddressed, these conditions most likely would lead to a stand replacement wildfire that would reduce or even eliminate forested habitat within the AA.

There are numerous old and decadent aspen stands in the AA. The survival of these stands is threatened by the lack of young replacement trees. Because of active fire suppression and livestock and wildlife utilization, these aspen stands have not been able to regenerate and replace dead and dying trees. Without protection and active enhancement of existing aspen clones, the potential for the decline and reduction of aspen stands in the AA is great.

Riparian areas within the AA historically have been altered by logging, road building, grazing and natural events, and currently are characterized by poor health. Because most of the streams in the area lack good structure and function, high water flows and heavy snow runoff result in even further riparian degradation. Without proper protection and improvement through structure placement, planting and fencing, riparian health will continue to decline and habitat associated with redband and rainbow trout will be reduced and possibly eliminated.

The encroachment of western juniper into riparian areas and grass/sagebrush rangeland ecotypes decreases the productivity of these areas. Fire historically limited this species primarily to rocky ridgetops. Comprehensive fire suppression has allowed juniper to establish itself over a much wider range and to out-compete Douglas-fir on some dryer forested sites.

Noxious weeds are increasing in disturbed areas and on other susceptible sites. Many weed species now populate riparian areas that have been heavily grazed and along major roads where vehicles have spread seeds. Absent effective weed elimination measures, continued noxious weed infestation will reduce the productivity of the riparian areas and impact rangeland resources.

Several project components designed to address the need for action could result in the extraction of commercial timber products, including biomass for potential energy generation.

1.3 General Location

Of the 37,912 acres that are encompassed by the AA boundary, approximately 25,160 acres are administered by the BLM. The AA is located about 28 miles southeast of Baker City, Oregon. The elevation for the area ranges from 2000 feet to 7120 feet at the summit of Lookout Mountain. The eastern boundary of the AA runs along the Snake River from near Bay Horse Creek in the south to approximately 2 miles north of Quicksand Creek. The remaining boundaries are not as easily describable and generally run south and west along the ridgetops incorporating BLM-administered land (See Map 1).

1.4 Scoping and Public Participation

The Lookout Mountain Landscape Area Management Plan DEIS/RMPA was initiated because of internal concerns regarding the overall health of the forest ecosystem within the AA and because of the high priority placed on that AA by the RMP. The IDT visited the area and developed initial resource management proposals. Internal scoping of issues and concerns began with a field trip to the area in October 1998. Follow-up meetings were held in November, and the IDT began the process of developing alternatives.

The BLM held a scoping meeting and field trips to the AA to gain information from and discuss Lookout Mountain resource management issues with the interested public and Indian Tribal governments. A field trip was held for all interested public on Saturday, September 25, 1999.

A Notice of Intent was published in the Baker City Herald on December 14, 2000 for one consecutive and successive day and the Hells Canyon Journal on December 21, 2000, for seven consecutive and successive days. In addition, the Notice of Intent was published in the Federal Register on November 28, 2000, Volume 65, Number 229, page 70934.

On December 1, 2000, a scoping letter was mailed to several interested parties stating that the BLM was examining the Lookout Mountain Geographic Unit and assessing how best to manage the resources of the area in order to develop and maintain a healthy ecosystem. Comment letters and other input received since the scoping began have been considered during the alternative preparation phase.

The purpose of the scoping process was to identify critical issues to be addressed through the environmental analysis documented herein. These issues, including forest health, fire/fuels, visual quality, recreation, watershed health, et al., are discussed in the body of this DEIS.

1.5 Relationship to BLM Policies, Programs and Other Plans

Planning Guidance for this DEIS and for the activities described therein is set forth in BLM Handbook H-1601-1, *Land Use Planning Handbook*. The DEIS is tiered to the Baker Resource Management Plan (RMP). Aside from proposing resource management activities, this DEIS proposes to amend the RMP 1) so as to more accurately reflect current Visual Resource Management (VRM) conditions and management objectives, 2) to reflect project-level road closures, relocation and/or construction, and 3) possibly to permanently exclude livestock from select, small, sensitive riparian areas. If any such changes to the RMP are made as a result of this DEIS, the analysis herein and the decision-making process engaged during the crafting of this document will satisfy the BLM's RMP amendment requirements as set forth in 43 Code of Federal Regulations (CFR) §1610.5-5. Because the authority to approve RMP amendments cannot be re-delegated to field or district manager levels, any such amendment must be reviewed and can only be approved by the Oregon/Washington State Director.

The Bureau of Land Management Vale District, of which the Baker Resource Area is a part, currently is preparing the Vale District Noxious Weed Program Environmental Assessment (EA). Although the EA is not complete and has not been signed, it is the professional opinion of the BLM personnel involved in the preparation of this DEIS that the EA, as it stands, is based upon sound science and is entirely in conformance with federal law. Therefore, this Lookout Mountain DEIS utilizes the tenets and directives of that EA. Noxious weed management within the Vale District currently is governed by the Vale District Integrated Weed Control Plan EA (1989), and Lookout Mountain weed treatments would adhere to the standards set forth therein. All noxious weed treatments also would comply with decisions made pursuant to the Northwest Area Noxious Weed Control Program EIS (March 1987), and the Lookout Mountain DEIS is tiered to the ROD prepared for that Program EIS.

1.6 Planning Consistency

The Federal Land Policy and Management Act (FLPMA), Title II, §202 compels the BLM to coordinate its planning efforts with Native American Indian Tribal governments, other Federal agencies, and agencies of state and local government. In order to accomplish this objective, the BLM is directed to keep informed of state, local and tribal plans, ensure that such plans are considered, and work toward resolving conflicts between such plans and BLM plans. These directives are repeated in BLM Resource Management Planning Regulations §1610.3. The BLM Baker Resource Area complied with FLPMA and the aforementioned planning regulations by apprising state, local and tribal officials of the proposed activity via mailings and meetings.

Pursuant to §1610.4-7 of the BLM Resource Planning Regulations, this DEIS must be provided to the Governor of the State of Oregon, other Federal agencies, state and local governments and Native American Indian Tribal governments for review and comment. The BLM Baker Resource Area will comply with these regulations, and any resulting comments

will be addressed in the Final EIS (FEIS). The formal 60-day consistency review by the Governor will occur following publication of the DEIS, as outlined in 1610.3-2(e) of the BLM Resource Management Planning Regulations.

1.6.1 Federal Agencies

This DEIS is consistent with the Federal Endangered Species Act. The described project is tiered to the Baker RMP, which reflected the Western Utility Group's *Western Regional Corridor Study*. However, no utility corridors or sites currently are authorized in the area, and there are no known proposed corridors for the area.

1.6.2 State Government

This DEIS is consistent with the following plans, programs and policies of State of Oregon agencies:

- Department of Environmental Quality Smoke Management Plan and other air quality policies;
- Water Resources Commission rules and statutes;
- Department of Agriculture weed control plans and state endangered species plans;
- Division of State Lands Oregon Natural Heritage Program;
- Parks and Recreation Department Statewide Comprehensive Outdoor Recreation Plan, State parks and Recreation System Plan, and State Historic Preservation Program;
- Department of Transportation, Highway Division Oregon Highway Plan; and
- The Oregon Forest Practices Act Rules.

1.6.3 Local Government

The DEIS is consistent with all local government plans and land use regulations. It must be noted, however, that state law prohibits local government from regulating forest practices.

Looking southeast from the summit of Big Lookout Mountain

2.0 Proposed Alternatives

2.1 Introduction

Five reasonable action alternatives meeting the purpose and need for the management of BLM-administered lands in the AA and addressing public issues and concerns, and a No Action Alternative, were fully developed and considered. Issues identified in the public meetings included grazing concerns, hunting and recreation opportunities, and Off-Highway Vehicle (OHV) and access issues. Issues identified by the IDT during the course of internal scoping meetings included water quality, forest health and mistletoe infestation, encroaching juniper, riparian health and functioning condition, rangeland health, wildlife habitat, visual quality, and recreational uses.

Each action alternative offers a possible course of action that, if selected, would provide management opportunities for the resources located within the AA. The No Action Alternative essentially would entail maintaining resource management in the area at its current state. Further, all action alternatives would involve the alteration of VRM classes and the mileage of roads in the AA, while the No Action alternative would not. Because these changes would alter the provisions of the RMP, an RMP amendment would be required. This amendment would take place at the time of the preparation and signing of the Record of Decision (ROD) regarding this

Lookout Mountain DEIS, and, like the activities set forth in the alternatives, is subject to public comment.

The interdisciplinary team charged with preparing this DEIS has chosen Alternative 2 as its preferred alternative, because it provides the most balanced approach to ecosystem health and other concerns, such as wildlife. Although the team is recommending Alternative 2 in its entirety, the Baker Resource Area Field Manager, who is charged with the responsibility for authorizing any projects deriving from this DEIS, will be free to "mix and match" components from the various alternatives in deciding on a final project structure. Because this flexibility exists, it is critical that the Bureau receive comments from the public, other agencies, and local and Tribal governments so that the Field Manager may make an informed decision, taking into full consideration the needs and concerns of all those affected by the prospective project.

2.2 Management Direction Common to All Action Alternatives

2.2.1 Forest and Woodland Treatments

The type of treatment undertaken would be determined by the type of forest community to be treated. The major difference between each of the action alternatives is the number of acres to be treated. The parameters of the treatments are the same for each alternative, and are as follows:

2.2.1.1 Mountain Shrub Treatment

Management emphasis within these areas would be to maintain and/or enhance the mountain shrub plant community using prescribed fire and limited timber harvest. An open overstory of six conifer trees per acre would be retained. Retention trees would be the largest diameter trees in the stand. Excess trees would be removed where economically feasible, or felled and left in place where commercial recovery is not feasible. Thereafter, prescribed fire would be used to establish a fire return interval of 30-50 years. Treatment in these areas would be done in one entry. All prescribed burns in mountain shrub stands would be planned in coordination with forest health slash burning and applicable grazing rotations.

2.2.1.2 Aspen Treatment

Management within these areas would emphasize removal of competing and encroaching conifer trees from aspen communities and, indeed, most conifer trees would be removed from aspen stands. Pure stands of aspen, aspen in wet meadows, and aspen in riparian areas would be protected and enhanced. Timber removal would be done where economically feasible, or trees would be felled and left in place where commercial recovery is not feasible. Retained conifer trees would not exceed 5% canopy cover. Along the edges of the aspen treatment areas, additional conifer trees may be removed to minimize encroachment. Treatment of these areas would be done in one entry.

Approximately 85 acres of existing aspen stands would be treated so as to regenerate aspen. Treatments would include felling aspen trees and using prescribed fire. Treatment areas would be protected with utilization standards, grazing system modifications, and possibly temporary fences. Livestock access limitations would be short-term, and would be lifted once aspen health objectives have been met. All prescribed burns in aspen stands would be coordinated with forest health slash burning and applicable grazing rotations.

2.2.1.3 Juniper Treatment

Historically, frequent low-intensity fire helped maintain an open landscape across the AA, killing juniper seedlings and saplings and thereby minimizing the spread of juniper and limiting the density of existing juniper stands (Gedney, 1999). Management of juniper stands

would emphasize reduction of juniper stocking to historic levels, particularly where juniper is encroaching into Douglas-fir stands and rangelands. Juniper treatments would consist of hand-cutting juniper trees and/or using prescribed fire, while retaining all large old junipers on rocky ridges and outcrops.

In areas in which juniper is encroaching upon rangeland, patches of 5-10 juniper trees would be retained across the landscape, spaced approximately 1/4 mile apart, or in the headwater areas of draws. In areas in which juniper is encroaching upon Douglas-fir stands, three juniper trees per acre would be retained, with approximately 120-foot spacing. All retention trees would be at least 10 inches in diameter. Cut trees may be used in riparian restoration, or may be sold as special forest products. Other disposal options would include piling and burning, burning individual standing trees, or resting treatment areas until native bunchgrass recovery bolsters ground vegetation enough to allow broadcast burning through the downed trees. The last option could take 2-5 or more years following the felling of trees. Areas may be underburned up to 5 years following the cutting treatment. All prescribed burns in juniper stands would be planned in coordination with forest health slash burning and applicable grazing rotations, and would be designed so as to comply with smoke management guidelines.

Juniper treatments along the Lookout Mountain road will be designed to minimize impacts on visual quality by removing cut juniper immediately under a special forest product contract or as material for riparian restoration structures. Other suitable methods may be discovered and used during the implementation of the action, though any method used would comply with VRM guidelines.

2.2.1.4 Douglas-fir Treatments

Five different types of Douglas-fir forest treatments have been developed to restore the health of forested stands in the Lookout Mountain area. Thin, thin-mistletoe, and thin-mistletoe-aspen treatments are designed to open up overstocked forests stands and increase tree vigor. Mistletoe and mistletoe patch treatments are designed to replace stands that bear heavy mistletoe infestation levels with mistletoe-free stands. Combination of these treatments potentially would be applied in Alternative 1, 2 and 5 depending on that alternative's objectives. Alternatives 3 and 4 involve unique treatments designed specifically to meet the objectives set forth in the descriptions of those alternatives herein.

Thin treatments - These treatments are designed to thin overstocked stands from below (removing smallest and leaving largest trees) and remove light levels of mistletoe infection. Treatments would reduce Douglas-fir basal area to 80-100 ft per acre and canopy cover to 35-45% in one or two entries, depending on current stocking[2]. Although most harvested trees would be in the 8-20" diameter at breast height (dbh) range, trees up to 24" dbh may be harvested in order to reduce stand basal area to desired levels. Most juniper trees would be removed. Prescribed burning would be done following the second entry. Stands with little understory would be thinned in a mosaic pattern, thereby varying stand density so as to increase opportunities for shrub establishment.

Thin Mistletoe treatments - These treatments are designed to thin overstocked stands with low or moderate levels of mistletoe infection from below and remove small (1/4 to 1/2ac.) pockets of trees that are heavily infested with mistletoe. Basal area in the thinned stands would be reduced to 80-100 ft per acre and canopy cover to 35-45% in one or two entries, depending on current stocking levels. Although most harvested trees would be in the 8-20" dbh range, trees up to 24" dbh may be harvested in order to reduce stand basal area to desired levels. Prescribed burning would be done following the second entry.

Thin - Mistletoe - Aspen treatments - These treatments would be conducted in Douglas-fir type stands in upper Fox Creek that have a large component of aspen and pockets of

[2] "Basal area" is a means of measuring tree stocking within a stand, and essentially is based upon tree sizes and numbers.

heavy mistletoe infection. The treatment objectives would be to thin overstocked Douglas-fir from below, remove Douglas-fir trees that are overtopping or competing with aspen, and to remove pockets of mistletoe-infected trees from the stands.

In portions of the stands with no or light mistletoe infection levels, basal area would be reduced to 80-100 ft per acre and canopy cover to 35-45% in one or two entries, depending on current stocking levels. Although most harvested trees would be in the 8-20" dbh range, trees up to 24" dbh may be harvested in order to reduce stand basal area to desired levels. Aspen would be favored over Douglas-fir in upland areas. In pockets characterized by heavy mistletoe infection, most conifer trees would be removed. Following treatment the canopy cover would vary throughout the stand, and the overall stand basal area would be reduced to less than 80 ft per acre. Prescribed burning would be done following the second entry.

Mistletoe treatments - These treatments would be performed in stands characterized by heavy mistletoe infestation, and are designed to remove all mistletoe-infected trees and regenerate mistletoe-free Douglas-fir stands. Within areas subject to these treatments, approximately 4-5 of the largest trees per acre would be retained in a scattered manner. Following prescribed burning, these retention trees would be girdled to create large diameter snags, which eventually would fall and become large down wood. In addition, small pockets (less than acre) of mistletoe-infected trees would be retained where they can be isolated from the rest of the stand. Approximately one pocket for every ten treatment acres would be retained. Following timber harvesting, prescribed fire would be used to prepare the area for tree planting, and treated areas would be reforested with Douglas-fir trees. Since aspen trees are not susceptible to mistletoe infection, aspens in these stands would be retained wherever possible.

Patch Mistletoe treatments - These treatments would be conducted in stands characterized by heavy mistletoe infection, and are designed to mitigate some of the effects of harvesting all of the trees from stands. Approximately half of each stand would be harvested in patches and the remaining half retained in patches. The size of the patches would be 3-5 acres. Natural buffers would be used as boundaries of treated patches wherever physically possible. Approximately 4-5 of the largest trees per acre scattered across the treated patches would be retained, and would be girdled so as to create large diameter snags that eventually would fall and become large down wood. Following harvest, prescribed burning would be used to prepare the treatment areas for planting with Douglas-fir trees. Since aspen is not susceptible to mistletoe infection, aspen trees in these stands would be retained wherever possible.

2.2.2 Timber Harvesting

Most of the timber harvesting planned in all of the action alternatives would be done in two entries. Areas with less than 160 ft per acre of basal area would be treated with one entry, in which basal area would be reduced to 80 to 100 ft per acre. In areas to be treated in two entries, the first entry would involve thinning from below, removing the smallest trees first with 60% canopy cover retention so as to allow development of an understory of shrubs and grasses. The second entry would occur approximately five to ten years after the first entry.

The standard harvest design features listed in the ROD (pp. 37-40) would be implemented. Timber felling would be done by hand or with ground-based mechanical equipment, depending upon slope and access to roads. Timber harvesting on slopes less than 35% and adjacent to roads would be done with ground-based harvesting equipment. The equipment would be restricted to pre-designated skid trails spaced approximately 100 feet apart; said skid trails would be water-barred and seeded following operations. Timber harvesting on 35%-70% slopes and adjacent to roads would be done with cable logging equipment, and, during yarding, the leading end of the log would be lifted off of the ground whenever possible.

Timber harvesting in areas not adjacent to roads would be done by helicopter. Skidding and yarding operations would avoid noxious weed sites wherever possible. Skid trails and yarding corridors may cross stream channels, although these crossings would be limited to the minimum number necessary and would be designed to protect streambank stability. On sites where harvest operations expose bare soil and it is determined that seeding is necessary, native grass seed would be used in rehabilitation.

Several areas will be deferred from treatment until specific riparian restoration projects have been completed, Rangeland Standards and Guides (as defined in § 2.2.7.1) have been in place for 3 years, and riparian areas are showing an upward trend. These areas would be treated only when riparian systems are healthy enough to handle potentially increased sedimentation and runoff that may result from upland treatments, as determined by a BLM hydrologist.

2.2.3 Juniper on Limestone Areas

Approximately 987 acres of exposed limestone bedrock with widely scattered juniper trees exist within the AA. These areas are very fragile with little or no soil, and would not be treated in any of the alternatives.

2.2.4 Fire/Fuels Management

One of the key goals of the National Fire Plan is to reduce the risk of wildfire, particularly within urban interface areas. Although no such areas or primary or secondary residences exist within the AA, isolated ranch structures and much private land is found in and adjacent to it. Fuels treatments would reduce the risk and intensity of wildland fire crossing the boundaries between the public domain and other lands.

Historically, fire was a major natural process in the AA. One objective common to all of the action alternatives, only to different degrees, is to return the role of fire into this area under managed conditions through prescribed burning. Each prescribed burn would be conducted in accordance with burn plans to be written and approved after the signing of the Record of Decision for this DEIS. Resource objectives developed for each burn plan would be site-specific, although a major objective for several of the vegetation types within the AA is to re-introduce fire as an agent of ecological maintenance.

Other site-specific objectives may include natural or activity-generated fuel load reduction, increased habitat diversity, the promotion of nutrient recycling, the control of disease or insect infestations, and plant succession management. Management objectives would be to reduce fuel levels from the current 10-20 tons per acre to levels no greater than 10 tons per acre, no more than 5 tons per acre of which would be scattered fine (0-3 inch diameter) fuels, except in

Table 3. Fuel Model Comparison

	Fuel Model 8	Fuel Model 10
Total Fuel Load <3 inch (tons/ac)	5	12
Fuel Bed Depth (feet)	0.2	1.0
Predicted Flame Length (feet)[3]	1.8	7.7
Predicted Rate of Spread (ft/min)	2.75	10.45
Crown Scorch Height (feet)	1.4	45

****Flame length, rate of spread, and crown scorch height determined by inputting fuel moisture of 4% and wind speed and mid-flame of 8.0 mph.*

PFAs (as described in § 2.2.6.1). This would change on-the-ground conditions from a Fuel Model 10 to a Fuel Model 8, as delineated below.

Note: The fire behavior estimates contained in this table were developed through the use of Behave: Fuel Modeling and Prediction System. The outputs are based upon 4% fine fuel moisture, 8mph mid-flame wind speed, a temperature of 80° F, and a 30% slope. Fuel Model 10 is the existing condition, while Fuel Model 8 is the desired future condition in Douglas-fir stands.

All burn plans would comply with the Standard Design Features as outlined in the ROD (p. 41). Prescribed fire would not be introduced into riparian areas except as necessary to achieve specific RCA (as described in § 2.2.5.6) enhancement objectives. Following prescribed burning, treatment areas would be rested from livestock grazing for a minimum of 2 years in accordance with the Baker RMP (ROD, p.41).

Additional prescribed burn planning measures would be as follows:

- Burns would be low intensity in order to minimize duff removal and to protect friable granitic soils from erosion;
- Burn plans would allow fire to back into riparian zones and other wet areas so as to ensure low intensity burning. Burns would be implemented when soil moisture is sufficient to protect most riparian vegetation. Fire line construction to mineral soil would not occur within riparian areas except when absolutely necessary to tie in lines, and even then only after exhausting other fire line construction options;
- Natural fire breaks, such as existing roads, would be utilized as fire lines and burn unit boundaries wherever possible so as to reduce the need to disturb soil;
- Snags not considered safety threats would be protected;
- Critical areas such as nest sites, sensitive plant habitat, cultural resource sites, recreation campsites, etc., would be protected as needed during burning operations;
- Jackpot and slash pile burning may be done prior to general broadcast burning in order to reduce fire intensities;
- All prescribed burn implementation would comply with daily smoke management advisories and the current Voluntary Smoke Management Plan for Baker City. This would reduce the chances of prescribed burn projects contributing to a non-attainment of air quality standards during critical time periods, as determined by DEQ.
- The Vale District Fire Management Plan sets forth management goals limiting the number of acres burned per decade in management areas containing the AA to a total of 40,500 acres of forest land, sagebrush/grassland and other non-forested vegetative communities. These acreage limits apply to all fires, whether wild or prescribed.

Air quality is a major concern, and the plan will comply with the State Implementation Plan for the Clean Air Act. Areas of primary concern are Class I airshed and non-attainment areas. All broadcast burning would be performed in fall and spring when climatic conditions support a safe, complete burn, and would be organized so as to conflict as little as possible with hunting. Burning under proper wind direction and atmospheric mixing would minimize smoke impact on local areas and areas of critical concern. Slash pile burning would occur in late fall or early spring if site access is feasible. In general, weather and fuel conditions will be closely monitored prior to and during prescribed fire activities so as to minimize impacts from smoke. Strict adherence to smoke management guidelines would minimize smoke drift into Baker Valley to the northwest, Treasure Valley to the southeast, and the Hells Canyon and Eagle Cap Wildernesses to the north of the AA, although smoke produced by prescribed burn projects could remain over the unit for several hours before dissipating. It is possible that smoke would drift into inhabited locations.

The BLM would be eager to engage in cooperative fuels reduction programs with private landowners in the Lookout Mountain area.

2.2.4.1 Fire Suppression

Under the current Vale District Fire Management Plan, all but approximately 600 acres of this AA is in an Appropriate Management Response (AMR) category. This allows for less than full suppression action if and when appropriate, although suppression under this category still should limit the number of acres burned by wildfire to a maximum of 200, and should ensure that those acres burn in a mosaic pattern. As such, there would be no "let burn" situations. Factors considered in determining the appropriate suppression response include forecasted weather conditions, fuel moisture, resources threatened, and the status of other fires. Under the AMR category, prescribed fire can be used to meet other resource objectives, including wildlife habitat enhancement, forest health amelioration, fuel loading reduction, and site restoration.

The remaining 600 acres of the AA, located north and west of Daly Creek, fall into the A-2 Category, which mandates full suppression of all unplanned ignitions. Under this category, wildfires should be suppressed at less than 2,000 acres 90% of the time, and prescribed fire may be utilized to meet other resource objectives.

2.2.5 Riparian Treatments

The riparian treatments envisioned by all action alternatives are designed to maintain and enhance riparian structure and function, to attain Proper Functioning Condition (PFC), and to ensure that said treatments would not result in significant impacts to downstream water quality. As such, no commercial timber would be harvested from Riparian Conservation Areas (RCAs) unless doing so would be necessary for establishing riparian health or enhancing aspen communities, consistent with riparian protection objectives and protective of cultural resources. Further, project design features for timber harvesting, roads, prescribed burns, and monitoring incorporate mitigations for the protection of water quality and stream/riparian areas.

2.2.5.1 Large Woody Debris Placement

Juniper and Douglas-fir trees cut pursuant to timber harvest treatments would be used for large woody debris (LWD) placements. These trees would be harvested in other stands without riparian areas. The large wood would be transported from the stands to the riparian areas and placed in the stream channels. Placement of LWD would be done by helicopter and/or tracked excavators to create weirs in the streams. LWD placements would use only trees that have no commercial value and are not harvested from RCAs.

LWD generally would be placed in streams characterized by down-cutting and unstable streambanks and riparian areas, and would act to restore the water table, the stream channel, and pool habitat. Streams in which LWD placement would occur were identified for that treatment on the basis of PFC survey results, Rangeland Standard and Guidelines analyses, and field surveys of the AA. Most of the stream and riparian restoration activities would be performed in and adjacent to Rosgen A and B stream types (Rosgen, 1996).

2.2.5.2 Riparian Planting and Seeding

Riparian areas would be planted with various hardwood species, e.g., alder, aspen, red-osier dogwood, willow, and cottonwood, so as to improve streambank stability and shade to the stream. Hardwood starts would be gathered from the watershed and propagated. Rooted stock would be out-planted the following year. Hardwood growth would be monitored until the plants are well established and over head height of all grazing animals.

Sedges, rush species, and other herbaceous riparian/wetland plants would be planted within the immediate streambank and riparian floodplain directly associated with the normal low flow channel to trap and hold sediments. Locally collected plant material would be propagated or purchased commercially. Adapted native plant seed stock would be used for riparian restoration.

Seed from established herbaceous plantings would be collected and re-distributed as available to achieve efficient revegetation with reduced cost. In addition, commercially available native plant seed would be used to augment supplies of locally collected seed. Seeding may be used in place of direct planting. If native seed is unavailable, sterile annual seed such as hybrid wheat or annual rye may be used for short-term cover crops to hold soil and increase organic mulch for native species. Planted and seeded sites would be protected from grazing for two to five years until cover is well established, and managed thereafter within grazing prescriptions for riparian utilization limits for hardwood and herbaceous species.

2.2.5.3 Riparian Aspen Treatments

Areas along Fox, Hibbard, Daly and Sisley Creeks have been identified in which aspen historically was the main hardwood component of the riparian vegetation community. In several of these areas, Douglas-fir and juniper are shading out existing clones, thereby threatening the survival of these clones. These areas would be treated so as to increase the likelihood of the survival of the clone and to reestablish streambank stability and shade. Conifer trees would be felled and left in place as LWD in the riparian area, or removed as necessary and as consistent with riparian health objectives. In areas where aspen trees are old and decadent, they may be felled to stimulate sprouting. In order to ensure the continued provision of shade, no conifer or aspen trees would be cut when doing so would reduce the canopy cover over a stream to less than 60%. Areas where aspen trees have died out would be replanted with native hardwoods. All RCAs would be protected from livestock grazing for two to five years, or until the clone is well established and streambank stability has been restored, as determined by a BLM hydrologist.

2.2.5.4 Noxious Weed Treatments

Noxious weed problems in riparian areas would be treated in accordance with the Biological Assessment for the Integrated Noxious Weed Management Program (USDI, 2001a), District Weed Plan guidelines and administrative procedures. These treatments would be done by hand; spraying would be done by hand with backpack sprayers.

2.2.5.5 Riparian Conservation Areas

In Alternatives 1-4, treatment activities occurring in the vicinity of RCAs will be subject to the following buffers, all of which have been formulated to afford effective protection for water, riparian vegetation, and riparian wildlife. Buffers for Alternative 5 are different, being delineated as Riparian Habitat Conservation Areas (RHCAs) under the Interior Columbia Basin Ecosystem Management Project (ICBEMP)(Interior Columbia Basin Final Environmental Impact Statement Proposed Decision, December 2000), and will be discussed in the description of that alternative:

> *Seasonally flowing or intermittent streams, wetlands less than an acre, landslides, and landslide-prone areas* - a buffer of 50 feet slope distance on both sides of the stream.
>
> *Perennial streams and intermittent streams that support fish spawning and rearing* - the stream channel and the area on either side of the stream extending from the edges of the active channel for a slope distance equal to the height of two site-potential trees (approximately 300 feet).

Perennial streams and intermittent streams that do not support fish - the stream channel and the area on either side of the stream extending from the edges of the active channel to a slope distance equal to the height of one site-potential tree (approximately 150 feet).

Ponds, lakes, reservoirs, and wetlands - the body of water or wetland and the area from the edge of the wetland, pond, or lake to the outer edges of riparian vegetation, or to the extent of seasonally saturated soil, or to slope distance equal to the height of one site-potential tree (approximately 150 feet), whichever is greatest.

No commercial timber harvest would be performed within any of these buffers. However, Douglas-fir trees in RCAs would be felled on three sites within the AA. These trees currently are preventing the development of and contributing to the deterioration of existing aspen clones. In order to restore these clones, the Douglas-fir trees would be cut and left in place or used as LWD
in the adjacent streams. The sites would be planted with young aspen so as to promote clone restoration.

2.2.5.6 Landowner Outreach

Members of the Lookout Mountain project ID team have been working with grazing permittees and individual landowners throughout the development of this DEIS. Within that time frame, the team met with and conducted field tours and PFC training for the landowners. During the field tours, BLM specialists and adjacent landowners discussed issues related to grazing, forest health, and stream and riparian conditions. Several downstream landowners agreed to conduct restoration on their land concurrently with BLM restoration under the Lookout Mountain project. Private land restoration activities would include hardwood planting, seeding, LWD placement and noxious weed treatments. Several grants have been approved through the Powder River Watershed Council for restoration of private land within the AA, e.g., the Fox Creek Riparian Fencing and Hardwood Planting Project. The BLM and the Watershed Council will work with individual landowners in developing restoration projects and navigating the grant process.

2.2.6 Wildlife habitat

Snags, down logs and large green trees are important for wildlife habitat and long-term site productivity. Where available, 5-10 down logs greater than 12" in diameter and 20 feet long would be retained per acre. Down logs may be removed from areas where these numbers are exceeded. At least 3 snags per acre within treatment areas would be retained where available, and these areas would be managed for 60% cavity excavator population levels (ROD pg. 39).

Surveys for wintering bald eagles will continue to be conducted annually along the Snake River Road. Northern goshawk surveys would be conducted each year to determine occupancy and nesting success. Other species of wildlife observed in the area would be recorded through incidental observation reports.

Management recommendations set forth by Partners in Flight include:

- Use understory prescribed burning and/or thinning when and where appropriate to reduce fuel loads and accelerate development of late-seral conditions;
- Retain all large trees, especially ponderosa pine greater than 18 inches dbh;
- Initiate snag creation and recruitment where necessary;
- Retain all existing snags and broken-top trees greater than 10 inches dbh in harvest units;
- Implement road closures (obliteration) where necessary to limit access to snags;
- Minimize mechanized harvest activities that increase susceptibility to invasion of exotic and noxious weeds and soil erosion;
- Discontinue fuelwood cutting or restrict to trees less under 15 inches dbh where snag objectives are not being met; and

- Permit stand-replacing wildland fires to burn where possible (Altman, 2000).

All action alternatives would implement treatments that would address the above recommendations to varying degrees.

2.2.6.1 Post-fledgling Family Area (PFA)

A northern goshawk nest site has been located in the Sisley Creek drainage. Because the northern goshawk is on the BLM sensitive species list, the following stipulations would be required as part and parcel of any proposed treatment (Reynolds et. al. 1992):

- Timber harvesting is deferred in the 30-acre parcel containing the nest stand.
- A minimum 400-acre PFA will be designated around each active nest site and be comprised of the best available habitat. While harvesting activities would be undertaken, a minimum of 60 percent of the PFA shall be managed as mature and old growth/old forest seral stages (approximately 80 years of age and older and hereafter referred to as late-successional) where sufficient acreage exists to do so. Harvest of late-successional forest stands may occur only when based upon a risk assessment and a determination of imminent threat to the viability of the habitat. An example would be harvesting for the creation of a fire break.
- Within the PFA, forest health projects and timber sale activities should be designed to promote the retention and development of existing late-successional stands. This may include the thinning of overstocked late seral stage forest stands (approximately 40-80 years) that may or may not have a late-successional component. In early and late seral stands, activities would be designed to promote forest health and the creation of late-successional conditions.
- All projects must be designed to avoid or minimize disturbance during the bonding and nesting period. Accordingly, seasonal restrictions would preclude all disturbance from April 1 through August 30.

Treatments within the nest stand would include thinning unwanted understory trees, utilizing non-uniform spacing, through the use of prescribed fire and/or hand operated tools. This would maintain the stand structure and endemic populations of insects and disease within the nest stand.

Management for the PFA is intended to create forest conditions that provide a diversity of habitat types for goshawks and their prey. The appropriate composition of forest conditions within the PFA include 10% grass/forb/shrub, 10% seedling/sapling forest, 20% young forest, 20% mid-aged forest, 20% mature forest, and 20% old forest. Thinning from below with irregular spacing of leave trees is the preferred treatment for maintaining stand structure within the PFA. These treatments would result in lower stand densities (basal areas) that, in turn, would promote fast tree growth, crown development, and herb and/or shrub development. Openings of no greater than 2 acres can be created within the PFA in order to promote the development of multi-aged stands. These openings would be irregular in shape and no greater than 150 feet in width. If openings are greater than 1 acre, they must have at least one group of 6 retention trees with interlocking crowns. Any treeless openings would be smaller than one acre. Openings would be scattered throughout the PFA wherever possible in order to develop the desired interspersal of structural stages. Canopy cover within the PFA would be retained at least at the 60% level in the forested stands. To accommodate wildlife, at least 3 snags per acre and 5 down logs per acre would be maintained. Fuels generated by harvest within the PFA would be reduced to levels that would minimize risk of stand replacing fires.

Currently, approximately 90% of the PFA may be characterized as a mid-aged forest stand, and the remaining 10% is a grass/forb/shrub community. Other community types are not represented in the PFA, and therefore an opportunity exists to create diverse forest conditions within the PFA. In order to accomplish this goal, approximately 30 acres would be treated to create fifteen 2-acre openings in the PFA within the first five years, and approximately 30

acres would be thinned, reducing the canopy cover to no less than 60%. In years five through ten, another 30 acres would be treated, resulting in another fifteen such openings, and another 30 acres would be thinned to no less than 60% canopy cover. All openings greater than one acre would have a group of six retention trees to ensure the future provision of snags and down logs. At no time would there be fewer than 240 acres of mid-aged to old forests in the PFA. Helicopter logging would be used for harvesting treatments within the PFA, unless the treatment unit is near an existing road. Harvest units would be designed and located so as to minimize impacts to visual quality within the area.

Riparian restoration projects within the PFA would include LWD placements, hardwood/ sedge planting, and the restoration of the aspen clones. These projects will not interfere with PFA management, and would restore the stream and riparian areas while meeting goshawk habitat objectives.

A Riparian Conservation Area (RCA) exists along the length of Sisley Creek and its tributaries. No PFA treatments would occur within this RCA.

2.2.7 Rangeland Management

In general, all land management undertaken pursuant to the Lookout Mountain project would comply with the BLM's Rangeland Health Standards (BLM, 2001b). These standards, in turn, were developed in conformance with the Fundamentals of Rangeland Health set forth in 43 CFR §4180.2(b). In essence, the standards aim to promote sustainable, healthy ecosystems, speedy restoration of public lands, and to ensure productivity of public lands in a sustainable manner. They are designed to ensure ecosystem integrity by, e.g., limiting seeding and planting of non-native vegetation to instances when native species are not available in sufficient quantities, native species are incapable of maintaining or achieving rangeland health standards, or where non-native species are essential for the protection of the functional integrity of the site.

BLM will minimize impacts on permittees by completing treatments in as brief a time as is feasible and effective. The number of acres treated is similar under all action alternatives, although the number of pastures affected varies. Livestock will be kept off of treatment areas for a minimum of two to five growing seasons, either by completely excluding them from the pasture in question or by installing a temporary fence around the treated area. This could result in a reduction of livestock numbers and/or the grazing season based on current utilization levels. The Range Management Specialist will coordinate with the permittees to adjust grazing schedules as needed and to minimize impacts to grazing regimens.

The RMP (ROD 1989) states that upland vegetation will be managed to achieve mid-seral stage plant communities. This would entail sustaining or managing upland grass-shrub vegetation to achieve desired range of future condition (DRFC) for all soil sites. Achieving the goals set forth in the RMP would require restricting livestock grazing in riparian habitat in poor or fair condition through season of use, utilization levels, and livestock numbers. This action should also provide for rest and rejuvenation of riparian vegetation on streams where needed.

Land managers also would continue to monitor effects of livestock grazing on habitats and resources, inventory where baseline data is lacking, adjust grazing systems and stocking levels to achieve DRFC and overall ecosystem health and defer livestock grazing for 2-5 growing seasons as needed to facilitate plant vigor on range rehabilitation project.

The land ownership in both the Daly Creek and the Soda Creek allotments is approximately 50% private and 50% public. Due to this fact, management objectives can affect private land owners and their livestock operations, and must be considered.

Table 4. Grazing Utilization Standards

Vegetation Type	FARN or Better PFC Rating	FARD or Lower PFC Rating
Upland Grasses	50% Utilization Level	45% Utilization Level
Riparian Grasses	45% Utilization Level	40% Utilization Level
Riparian Shrubs	45% Utilization Level	30% Utilization Level

Note: FARN = Functioning At Risk With No Apparent Trend
FARD = Functioning At Risk With a Downward Trend
PFC = Proper Functioning Condition

Under all alternatives, six miles of new 4-strand barbed wire lay down fence would be constructed, two miles of which would be located in the Hibbard Creek Pasture of the Snake River Allotment beginning at T11S, R45E, Sec 30 and ending at T12S, R45E, Sec 5. Another two miles of fence would be located between the Hibbard and Miller Pastures of the Snake River Allotment beginning at T11S, R45E, Sec 36 and ending at T12S, R45E Sec 6. The third two-mile section of fence would be constructed on the Wells Basin Allotment beginning at T11S R44E Sec 13 and ending at T11S R45E Sec 30. Further, development of a spring is proposed at T11S, R44E, SENW Sec 24, in order to improve livestock distribution patterns and to protect the spring source from livestock trampling.

Grazing utilization standard for uplands and riparian areas within the Lookout Mountain Geographical Area would be implemented as follows:

2.2.7.1 Standards and Guides

The BLM, pursuant to current grazing regulations (1995), was directed to develop state or regional standards and guidelines for rangeland health. The objectives of these standards are to promote healthy, sustainable rangeland ecosystems, to accelerate restoration and improvement of public rangelands to properly functioning conditions and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy rangelands. With public participation and assistance from the Resource Advisory Councils Statewide, Standards and Guidelines (S&Gs) were developed for Oregon and Washington and finalized on August 12, 1997. These S&Gs set forth objectives for various aspects of rangeland health, including upland watershed function, riparian/wetland watershed function, ecological process, water quality, and native threatened, endangered, and locally sensitive species. Rangeland health would be assessed on a recurring basis, and if a particular area fails to meet or has not made significant progress toward meeting the standards delineated in the S&Gs, then concrete steps would be taken to ensure achievement of those standards. If livestock grazing is determined to be a factor of nonattainment of the standards, then land managers will work with permittees, lessees, interested publics, and other state and federal agencies to improve resource conditions and ensure future attainment of the standards. Regardless of which alternative is chosen, the rangeland S&Gs will be implemented.

Under all alternatives, existing wildlife and riparian exclosures located in the AA would be evaluated to determine their functional condition and whether they are meeting the objectives for which they were constructed. Data would be gathered on each of the exclosures' current condition, functionality, location, and requisite maintenance or repair costs. This information would be used to determine which exclosures would be repaired and maintained or removed.

The potential need for additional exclosures in the analysis area also would be examined. A prioritized list of these exclosures would be developed to aid in yearly budgeting for repairs and maintenance.

2.2.7.2 Rangeland Prescribed Burns

Fire would be reintroduced onto 1287 acres of rangeland vegetation communities by prescription, specifically on the North pasture of the Snake River allotment and on the Camp Creek, Ridge, Alder Creek, Quicksand, and Douglas pastures of the Soda Creek allotment. One such rangeland burn of approximately 220 acres would be undertaken in order to reduce the overburden of big sagebrush so as to facilitate the release and restore the vigor of native bunchgrass and forb species. On the other project rangeland sites, burning would be done to clear annual vegetation and create conditions in which perennial vegetation can be restored, which, in turn, would restore rangeland health. Further, there are areas of grassland located between the forested areas that will be burned in conjunction with the prescribed burns that will take place following treatment of adjacent units.

Following burning, these areas would be treated with herbicides to prevent the establishment of noxious weeds, in accordance with the Vale District Noxious Weed Management Program. Burned areas would be seeded with a mixture of adapted perennial native and nonnative grasses, forbs, and shrubs, and may include sherman bluegrass, secar or Goldar bluebunch wheatgrass, Idaho fescue, silky lupine, western yarrow, globemallow, squirrel tail and bitter brush on south slopes. The seeding would be done using a rangeland drill, and/or aerial application with a helicopter, at a rate of approximately 10 pounds per acre by range drill, or up to 20 pounds per acre by aerial seeding. The final seed mix would depend upon seed availability. If native seed is not available, sterile annual seed such as hybrid wheat or annual rye may be used for short-term cover crops to hold soil and increase organic mulch for native species.

Treated areas would be closed from livestock grazing for a minimum of two growing seasons by resting or deferring use. The decision to permit renewed grazing would be made by BLM resource specialists based upon the criteria set forth in section 4.14.1 of this document.

2.2.8 Road System Management

Approximately 89 miles of existing open roads within and adjacent to the Analysis Area were considered for management activities. All land use and ownership issues such as easements and right-of-way agreements would be treated in accordance with District policy. Each of the existing roads within the project area was examined to determine whether it should be closed to reduce erosion, sedimentation into streams, and adverse impacts to wildlife. Existing roads providing access to adjacent private land, under existing right-of-way agreements, or needed for future operations (within five to ten years) would remain open. Those that do not meet these criteria were considered for closure, with the amount of road to be closed varying by alternative. Roads would be closed with strategically located gates, barriers, or tank traps, and then seeded and/or subsoiled and water-barred to help protect water quality and to eliminate the risk of sediment production into streams. Where necessary, large logs would be placed in closed roads to reduce sediment production. Where closed roads function as stream channels, hardwood trees may be planted as a temporary measure to protect water quality, with the understanding that additional remedial actions will be taken in the future.

The Lookout Mountain and Morgan Creek roads are maintained annually; all other roads in the AA are maintained as need and funding arises so as to facilitate access and prevent sediment runoff. Road maintenance would include surface grading, cleaning ditches and culverts, and re-graveling stream crossings. There would be no blading or side-casting of material into streams and riparian areas where that material could be moved into the channel by high flows. Future maintenance would concentrate on repairing culverts and stream and spring crossings. Bare soil areas in stream crossings so as to reduce sediment to streams.

Annual maintenance activities would be reviewed by specialists, best management practices would be employed so as to prevent sedimentation to streams, and only areas that need maintenance would be disturbed.

2.2.8.1 Decommission Existing Roads

The ID team identified several existing roads that need to be decommissioned permanently in order to improve and protect water quality and fish habitat. As funding allows, these roads would be decommissioned in order of priority. Roads would be subsoiled, water-barred, seeded and/or planted. All culverts would be removed, and stream crossings would be restored to their natural channel gradient and re-vegetated, and streambanks would be re-contoured to match surrounding topography. Roads would be blocked from all use; no vehicular travel would be permitted. Placement of LWD may be performed to help facilitate the development of more natural ground conditions and to help block vehicle passage. If a road is to be decommissioned and replaced by a new road, decommissioning will follow construction of the new road. The following existing roads may be decommissioned and closed permanently:

- Sisley Creek - The Sisley Creek road would be closed from the Lookout Mountain Road to the intersection with the new construction mentioned below, and would be replaced by a new road.
- Fox Creek - The Upper Fox Creek road would be closed from the intersection with the Lookout Mountain Road to an open meadow area below the source of present water quality problems. It would be replaced with a new road.
- Hibbard Creek to Fox Creek Switch Back - The Upper Hibbard to Fox Creek road would be closed at the bottom of the switch back located on the upper Hibbard road.
- Gold Creek - The road at the BLM boundary to the west of Big Lookout Mountain would be closed.
- Daly Creek - The road in Sections 9 and 10, T. 11 S., R. 45 E. in Daly Creek would be closed.
- Snake River tributaries - The roads located next to Canyon Creek, Magpie Gulch, and Douglas Creek would be closed following completion of riparian restoration treatments. During the restoration of the streams and riparian areas, only permittees and BLM employees on official business would be allowed access to these roads. After 80% of the area vegetation has recovered, non-vehicular access would be allowed.

2.2.8.2 Existing Road Improvement

The ID team identified several existing roads that need improvement so as to protect water quality and fish habitat. In areas where water runoff from open roads is impacting water quality, portions of the road would be improved as funding allows. Vegetation would be established in bare soil areas. Roads would be rocked at spring crossings to divert all water away from the road and into vegetated areas, or drainage structures would be installed. Roads would be graveled in wet areas, and would be diverted (rebuilt) away from streams for short distances in order to create a buffer between roads and streams and thereby permit natural stream migration. Any rock used in road improvement activities would be procured from a commercial source, or from a source located along the Lookout Mountain road. If the latter is used, all rock extraction activities would be consistent with Visual Resource Management (VRM) guidelines, and would be subject to additional NEPA analysis. All new culverts would be sized for a 100-year flood event. Any instream road work would be performed between

July 1 and October 31 in accordance with accepted standards (ODF&W 1997). Proposed activities for specific roads are as follows:

- Morgan Creek - A culvert would be installed at the first tributary that crosses the road at the switchback located in T.12 S., R. 44 E., Section 24. All other spring crossings would be rocked, and all water would be diverted away from the road so that limited or no sediment would be carried to the stream. The road would be re-routed away from a stream for a distance of 500-1000 feet where erosion currently is occurring. The entire road would be graveled from the Lookout Mountain Road to the junction of the Snake River Road for a distance of approximately 4.7 miles, if funding is available. If funding is not available to improve the entire existing road, improvements would be performed on a smaller scale at several specific locations.

- Tent Frames Road - The road is located in T. 11 S., R. 45 E., Sec. 29 and 30. There are several creek crossings along this county road where improvements would be made and the road would be graveled. These creek crossings would be stabilized upstream and downstream of the crossings with rocks and boulders, as needed, to prevent head-cutting and road erosion. The crossings would be well-aproned on both sides in order to limit sediment reaching the stream. Larger rock would be placed as the primary base layer at the crossings to allow water filtration, with a top layer of smaller rock to provide a stable crossing surface, hold the large rock in place and capture sediment. The base rock would be deep enough to contain bankfull flow. All improvements to this road would be done with the consultation, agreement and cooperation of Baker County government.

- West Fork Hibbard Creek Road- The road is located in T. 12 S., R. 44 E. Section 12 to T. 12 S., R. 45 E., Sec. 6. There are 10 springs, supported by several acres of wetlands, that flow across the Hibbard Creek road into Hibbard Creek. Each of these crossings would be graveled in order to re-route water back to the creek rather than down the road. The crossings would be well-aproned on both sides so as to minimize sediment reaching the stream. Large rock would be placed as the primary base layer at the crossing to facilitate water filtration, with a top layer of smaller rock to provide a stable crossing surface, hold the large rock in place and capture sediment. The base rock would be deep enough to contain bankfull flow.

2.2.8.3 New Permanent Roads

The construction of new roads is envisioned under all action alternatives except Alternative 4. New roads would be constructed outside of stream channels and on stable locations. The roads would be 16 feet wide, naturally surfaced, and outsloped and grade rolled to provide adequate drainage wherever possible. In particular, the following roads would be constructed:

- Fox-Hibbard Ridge Road - This road would be a permanent 1.5 mile new road to replace the existing Fox Creek Road, which is creating water quality problems. The road would be built on the top of the ridge located between Fox Creek and Hibbard Creek located in T. 11S., R.45E. Sec. 31.

- Sisley Creek Ridge Road - This permanent 1.25 mile new road north of Sisley Creek would replace the existing Sisley Creek Road, which is creating water quality problems.

2.2.8.4 Temporary Use of Currently Closed Roads

Under all action alternatives except Alternative 4, existing blocked roads totaling approximately 1.3 miles in T. 11 S., R. 45 S., Secs. 18 and 21 in the upper Pole Creek and Daly Creek drainages would be opened to facilitate timber harvesting. These roads would be used only during implementation of forest management activities and closed when activities are completed. After management activities are completed, the road prism would be left in

place but the road would be blocked, and the entire road would be re-seeded with native plants.

2.2.8.5 New Temporary Roads

- Sisley Creek Drainage Spur - Under Alternatives 1, 2 and 5, a 1.25 mile road would be constructed on a ridge well above Sisley Creek to facilitate timber harvesting. The road would be used only during implementation of forest management activities and be closed at all other times. After management activities are completed, the road prism would be left in place but the entrance would be blocked and camouflaged, and the entire road would be re-seeded with native plants.

- Tent Frames Spur Road - Under Alternatives 1 and 3, a temporary .15 mile road would be constructed on a ridge between Conner and Fox Creeks. The road would be used only during implementation of forest management activities and be closed at all other times. After said activities are completed, the road prism would be left in place but the entrance would be blocked and camouflaged, and the entire road would be re-seeded with native plants.

2.2.9 Cultural Resources

The following management direction and design features would be adopted under all action alternatives in order to ensure that important cultural resources are protected (typically by avoidance) during the course of treatments:

- Historic homesteads, sawmills, cabin sites, "sheepherder" rock cairns, old sheep camps and structures would be managed for their information values and would be available for public appreciation so as to enhance dispersed historical/cultural sightseeing;
- Wagon roads would be recorded in detail and mapped for their information, and would be retained for public appreciation where feasible;
- Historic mining cabin sites would be protected for information values and public appreciation. Mining ditches would be recorded and mapped for their information, and retained for public appreciation where feasible. Individual mining features, prospect pits and isolated mine tailings for example, would be recorded for their information but would not receive further management;
- Historic aspen trees would be recorded and retained for public appreciation so as to enhance dispersed historical/cultural sightseeing. Many of these scribed aspen are approaching the end of their life cycle as individual trees. Healthy aspen with inscriptions more than 50 years old would be excluded from felling under thinning or aspen regeneration treatments;
- Native American cultural resource sites including lithic scatters, rockshelters, rock features and rock cairns would be protected and retained for their traditional and information value; and
- Isolated artifacts (e.g., objects not associated with an historic or archaeological site or identifiable area of occupation) would be mapped and recorded for their information, but would not receive further protection.

Project design features include:

- Cultural resource sites that are recorded within harvest or thinning treatment areas would be buffered to exclude them from disturbance. Contracts for harvest or thinning treatments would include standard stipulations for protection of any cultural properties that might be discovered during implementation;
- Cultural resources located in or adjacent to existing or new roads, or roads proposed for decommissioning, would be excluded from associated ground disturbance;

- Cultural resource sites located in riparian settings would be avoided and would be included in established or specifically expanded riparian buffers;
- Any cultural resource sites affected by current or potential livestock trampling associated with congregation in riparian settings would be protected by implementing Rangeland Standards and Guides actions and potentially other Land Health Guidelines measures to reduce on-site utilization and/or by erecting small exclosures to exclude livestock. Five archaeological sites have been identified as needing protection; these sites would be monitored on an annual basis during the first five years of implementation of any changes in grazing utilization, and periodically thereafter.
- Cultural resource inventories would be conducted on any new rangeland projects proposed under implementation of rangeland standards and guides;
- Cultural resource sites located adjacent to riparian settings would be avoided during planting and placement of riparian structures or large woody debris;
- Barriers would be erected at locations where cultural resource sites may be impacted by current or potential recreational OHV uses. If barriers are ineffective, other protective measures would be explored;
- Information encouraging protection of heritage resources would be included in any signage associated with recreation sites on Lookout Mountain;
- Any future proposal to implement recreation fee use or improvements for the cabin on Sisley Creek will be evaluated for effects to the property and its surroundings. The cabin was extensively modified when stabilized and used by its prior occupants. If any historic integrity remains, the site will be addressed and protected under any recreation plan;
- Fences or other physical barriers that protect cultural resources from livestock congregation and trampling, recreation-related or other impacts would be maintained;
- Prescribed burns, range projects and livestock use allocations will follow procedures for identification and protection identified in the 1998 Oregon BLM - Oregon State Historic Preservation Office Protocol for Managing Cultural Resources, and implementing the National Historic Preservation Act. For prescribed burns (including those in rangeland, forested and juniper treatment areas) these procedures include prior reconnaissance of the burn area, inventory of proposed fire lines and areas likely to contain vulnerable cultural resources. Archaeological sites would be excluded from ground disturbance and important historic resources protected from fire. Prescribed burn parameters at ground level would be maintained below known critical thresholds for creating mechanical and chemical changes in stone artifacts, and below thresholds affecting historic properties, whenever feasible (1998 BLM-SHPO Protocol, Appendix C). Newly burned areas proposed for seeding using rangeland drills would be intensively inventoried. Prescribed burn areas will be monitored after implementation for compliance with avoidance prescriptions and condition of cultural resources;
- Following treatment, cultural resources would be monitored periodically for condition and compliance with protection stipulations. This monitoring would endure throughout the life of the Lookout Mountain project; and
- Any site-specific treatments or projects not previously inventoried would be inventoried before implementation, and cultural resources eligible for inclusion in the National Register would be subject to the management direction and protection set forth above. Activities subject to this protocol include, but are not limited to BLM-initiated actions that would cross private lands, such as access roads and helispots.

2.2.10 Recreation and Visual Resources

Treatment activities would be sited so as not to result in long-term negative impacts to recreation and visual resources.

Prescribed burns will not be undertaken in the immediate vicinity of established campsites. Log hauling through the Bassar Diggins campground would be avoided during the fall. The public would be informed of logging traffic via public notices and/or newspaper articles.

Pursuant to current Visual Resource Management (VRM) guidelines, the casual observer may be able to see that some management activity has occurred in areas categorized as Class II, but the activity should remain subordinate to the characteristic landscape in the long term. Within Class III areas, management activities may attract the attention of the casual observer but it should not dominate their view. The existing character of the landscape will be partially retained. Within Class IV areas, the level of change may be high. However, every attempt will be made to minimize the impact of activities through careful location, minimal disturbance, and repeating basic visual elements. Although BLM's VRM guidelines indicate that a deciding officer may authorize project activities that fail to satisfy established VRM management objectives without completing an RMP amendment, the activities proposed herein have been designed and would be mitigated so as to minimize the breaching of those objectives.

Under the Baker RMP (1989), the entire Lookout Mountain Geographic Unit (GU) was categorized as Class II. Technological advances and supplemental field work in more recent years has revealed that a variety of VRM classes exists in the GU (see VRM map).

The GU offers outstanding landscape variety. Landscape variety within the GU would be maintained over time and would appear natural. Diversity would be encouraged by retaining a variety of textures, age classes, and patterns. Risk of catastrophic disturbances in the GU would be reduced by means of a variety of forest and shrubland treatments aimed at establishing sustainable landscapes. Because the landscape would appear natural, the visual resource management objectives would be attained in the long term.

Within forested areas, a blend of coniferous and deciduous stands would predominate. A dramatic impression of fall color contrast would be created with the aspen contrasting against evergreen patterns. The shrublands also would contribute to the fall color contrasts with cherry, serviceberry, ninebark, mountain maple, elderberry, and willow turning various shades of red, orange, and yellow.

The foreground vegetation along the Lookout Mountain Road would be retained for color, variety, and texture. The background views from I-84 and Hwy 86 would be retained as an oasis of green vegetation within an expanse of high desert browns.

2.2.10.1 Bassar Diggins Recreation Site

All action alternatives recommend implementation of improvements at Bassar Diggins, which may be undertaken when and if funding becomes available. Improvements would be subject to cultural resources clearance, and may include development of potable water sources, vault toilets, level camping and RV parking spaces, picnic tables and fire rings. A range fence may be installed around the Bassar Diggins basin and tied into existing range allotment fences.

2.3 No Action Alternative

Under the No Action Alternative, existing uses of the Lookout Mountain Geographic Unit would continue. Grazing would continue and the custodial maintenance of the area would not change. No attempt to reduce stocking levels of forest stands is currently foreseen. No planned timber sales would be implemented under this alternative during the next fifteen years, and unplanned minor or salvage sales would require additional NEPA analysis. No effort would be made to renovate or close problem sections of roads, re-introduce fire into the ecosystem, or improve the condition of riparian areas.

Noxious weed management would continue, following the guidelines set forth in the current Vale District Integrated Weed Control Plan Environmental Assessment (EA). Noxious weeds within the Geographic Unit would be treated as time and money allows. Primary weeds of concern within this unit are rush skeletonweed, perennial pepperweed, white top, and Scotch

thistle. It is likely, though uncertain, that diffuse knapweed exists on BLM land within the unit. Other weeds of secondary concern include black henbane and Canada thistle. With the exception of possible aerial applications on rush skeletonweed, planned treatments would consist of spot treatments either by hand with a backpack sprayer, from an all-terrain vehicle, or from a vehicle along roadsides. All pertinent mitigating measures and best management practices would be followed.

Currently, the use of bio-control agents on weed sites is not planned, although such agents may be utilized in the future.

Under the no action alternative, the regulatory portion of range Standards & Guides (S&G) would be implemented, including possible changes to season of use, AUM's, grazing systems, and forage utilization, as necessary.

Forest stands would continue to be monitored and managed. Management actions potentially would include removal of danger trees in recreation sites, removal of a small amount (5-10 thousand board feet (MBF)) of dead and dying timber, precommercial thinning, and the issuance of special forest product permits for harvesting such items as firewood, fenceposts, cones, and mushrooms.

The Lookout Mountain and Morgan Creek roads would continue to be maintained annually. Occasional maintenance, brushing, and removal of safety hazards on other roads would be done as needed.

In general, most management actions presumably would continue in the area. These actions would not be expected to be ground disturbing, and would be subject to NEPA compliance.

2.3.1 Watersheds and Fisheries

Pursuant to the No Action Alternative, current practices of riparian area management would continue. Guidance for such management in the Lookout Mountain Geographic Unit is set forth in the Baker Resource Management Plan (RMP)(ROD, 1989, pp. 55-7). The ROD states that Resource Condition Objective for riparian areas is to "[r]eestablish, improve and/or maintain riparian habitat in or adjacent to seeps, springs, wet meadows and perennial streams" (ROD, p. 55). The No Action alternative, based upon RMP directives, potentially could improve fish habitat, riparian areas, water quality, and roads as funding permits.

As needed to meet these objectives, livestock grazing would be restricted in riparian habitat of poor or fair condition through the management of season of use, utilization levels, and livestock numbers. Livestock would be excluded in selected riparian areas by the use of exclosure fences. Additional management actions that would be undertaken in riparian area include the continued selective implementation of grazing systems that provide for rest and rejuvenation of riparian vegetation, and of the Morgan Creek watershed plan, which includes but is not limited to construction of instream structures, fences and plantings. Also, the monitoring and inventorying of habitats where base data is lacking would continue, as would the conducting of riparian surveys on 6.5 miles of streams within the geographic unit. Existing and potential riparian habitat would be established or improved on Morgan Creek, Pole Gulch, Spring Creek, Sisley Creek, Fox Creek and Conner Creek, subject to the appropriate level of environmental analysis. The maintenance and improvement of fish and wildlife habitat, and the monitoring of fish habitat conditions and trends in Conner Creek would continue.

2.3.2 Fuels/Fire Management

Under the No Action Alternative, no fuels reduction or removal projects would be implemented, with the possible exception of some limited future prescribed burning in

conjunction with noxious weed management activities or restoration of rangeland areas dominated by annuals. Similarly, as various vegetation communities showed signs of deteriorating, individual prescribed burns could be undertaken as a means of rehabilitating vegetation on sites characterized by deteriorating vegetative health. Individual environmental assessments would be prepared for each such proposed project.

2.3.3 Rangeland Management

Under all alternatives, including the No Action Alternative, wildlife and riparian exclosures located in the AA would be evaluated to determine their functional condition and whether they are meeting the objectives for which they were constructed. Data would be gathered on each of the exclosures' current condition, functionality, location, and requisite maintenance or repair costs. This information would be used to determine which exclosures would be repaired and maintained or removed. The potential need for additional exclosures in the analysis area also would be examined. A prioritized list of these exclosures would be developed to aid in yearly budgeting for repairs and maintenance.

2.3.4 Wildlife

Basic inventories for specific wildlife species would be conducted each year. Northern goshawk surveys would be conducted each year to determine occupancy and nesting success. Other species of wildlife observed in the area would be recorded through incidental observation reports.

2.3.5 Cultural Resources

Inventories for cultural resources would occur on a project-by-project basis. Protection of cultural resources eligible for inclusion in the National Register would be accomplished by avoidance and/or project re-design. Existing fence exclosures that protect cultural resources from grazing impacts would be retained.

2.4 Action Alternatives

Five action alternatives have been developed to address all resource management issues.

2.4.1 Alternative 1

2.4.1.1 Forest, Woodlands and Mountain Shrub Communities

This alternative is designed to treat forest health concerns in the Lookout Mountain area, maintaining and/or enhancing Douglas-fir forest stands and mountain shrub communities. Overstocked stands would be thinned so as to increase tree vigor, mistletoe would be removed from some of the heavily infested stands, and decadent mountain shrub communities would be restored. Timber harvesting would be used to treat approximately1850 acres, or 63% of the immature, mature, and old forest stands, and 4800 acres could be subject to prescribed burning during the first 10-15 years of treatment implementation. Timber harvest treatments would be designed to address most of the forest health concerns in the Lookout Mountain GU.

Thinning treatments, including thin and thin/mistletoe treatments, would reduce stand basal area to 80-100 ft^2 per acre on approximately 1186 acres. The residual canopy cover would be 35-45%. The thin/mistletoe treatments would remove small pockets of mistletoe-infected trees, thereby creating small openings in the stand. Most harvested trees would be in the 8-20" dbh range. However, trees up to 24" dbh may need to be harvested in order to reduce stand basal area to desired levels and to preclude the spread of mistletoe.

Mistletoe treatments would be performed on approximately 604 acres afflicted with high levels of mistletoe infection. These treatments would reduce the overall stand basal area to 5-10 ft per acre, with a residual conifer canopy cover of 5-10%. Approximately 5-10 down logs and 3 snags per acre would be retained in all treated areas. Following harvest, these areas would be planted
with 300 trees per acre. Untreated stands would retain high basal area and canopy cover in the short term.

Approximately 357 acres (40%) of the 885 acres in the GU currently classified as old forest would be harvested and converted to young forests with a mountain shrub component. This harvesting would remove most, or all, of the large old trees in these stands. Thinning treatments would be done in 165 acres (19%) of old forest. Since the thinning would be from below, the large old trees would be retained and the old forest classification would not be changed. However this thinning would remove some of the lower canopy layers.

Patch cuts designed to address heavy mistletoe infestation would create 30 2-acre openings in forest stands within the PFAs.

With the exception of the PFAs, the general fuels management objective for treated Douglas-fir stands is to limit on-the-ground fine (0-3" diameter) fuel loadings to 5 tons per acre, with no more than 10 tons per acres of all fuel classes. The 5 tons per acre of scattered fine fuels is best represented by fuel model 8 (Anderson, p. 11)

On units in which Douglas-fir, juniper and mountain shrub treatments would require only one entry, broadcast burning would be conducted where feasible after the entry so as to return fire to the ecosystem under managed conditions. Frequently, however, achieving satisfactory broadcast burns on Douglas-fir sites can be exceedingly difficult. In such situations, jackpot burning would be performed in order to remove concentrations of fuels. Other stands planned for thinning or mistletoe treatments would be entered twice within 5-10 years in order to accomplish forest health objectives in a gradual manner. Depending on the site and the amount of slash and other treatment-generated fuel loadings present after the first entry, slash either would be piled and burned or removed offsite. Friable granitic sands dominate much of the soil types in the GU. Up to 10 tons per acre of fuels, no more than 5 tons per acre of which would be scattered fine fuels, would be left in place between entries in order to facilitate soil protection. Broadcast burning would be performed on these units following the second entry, unless high treatment-generated fuel loadings necessitate piling and burning to ensure low fire intensities of a later broadcast burn. Up to 30 tons of slash per acre could be generated by treatment activities on overstocked stands and stands heavily infected by mistletoe.

Acreages of the various planned forest, woodlands and mountain shrub treatments under Alternative 1 are as follows:

Mountain Shrub Treatment - 1255 treatment acres. Although trees would be cut on all treatment acres, commercial removal of Douglas-fir timber would be feasible only on 437 acres.

Juniper Treatment - 642 treatment acres.

Douglas fir stands - 1730 acres within immature and mature stands would be treated, using the following previously described treatment types:

- Thin Treatments - 822 treatment acres. Douglas-fir trees would be favored over aspen in this treatment prescription.

- Thin-Mistletoe treatments - 304 treatment acres.

- Mistletoe Treatments - 604 treatment acres.

2.4.1.2 Riparian Treatments

Project design features for timber harvesting, RCAs, roads, prescribed burns, and monitoring incorporate mitigations for the protection of water quality and stream/riparian areas. Specific riparian treatments are as follows:

Large Woody Debris Placement and Riparian Planting-10.7 miles

Riparian Planting - 0.7 miles

These restoration activities would promote pool habitat, increase shade, stabilize streambanks, and reduce sediment production on 11.4 miles of stream. This alternative proposes the lowest number of miles of restoration.

On 405 acres, harvest would be delayed until riparian/stream restoration projects have been completed and these areas stabilized. This alternative entails delayed harvest on more acreage than any other alternative.

2.4.1.3 Roads

Of the various alternatives, this alternative would entail closure of the second lowest mileage of roads, the construction of the highest mileage of new roads, and the retention of the highest mileage of open roads.

Existing open roads - 86.9 miles of existing open road would remain open.

Temporary use of currently closed roads - Pole Creek road east of Big Lookout Mountain and Daly Creek road east of Sugarloaf Mountain, totaling approximately 1.3 miles, would be used temporarily.

Decommission existing roads - The Sisley Creek and Fox Creek roads, and Gold Creek road west of Big Lookout Mountain, totaling approximately 5.1 miles, would be closed.

New permanent road - The Sisley Creek and Fox-Hibbard Ridge roads, totaling approximately 2.8 miles, would be constructed.

New Temporary roads - The Sisley Creek drainage road west of the Sisley Creek road, the Tent Frames Spur road, and a spur road off of and north of the Lookout Mountain Road and south of the Sisley Creek Road in Sec. 25, T. 11S., R. 44E., totaling 1.4 miles, would be constructed.

Existing road improvement - 10.0 miles of Morgan Creek road and Tent Frames Road would be improved.

2.4.2 Alternative 2 (Preferred Alternative)

2.4.2.1 Forest, Woodlands and Mountain Shrub Communities

This alternative would treat overstocked and mistletoe-infected Douglas-fir stands, maintain selected areas of big game thermal and hiding cover, treat selected areas of mountain shrub communities, and enhance aspen stands in the upper reaches of Fox Creek and Conner Creek. Timber harvesting and prescribed fire would be used to treat approximately1313 acres, or 45% of the immature, mature, and old forest stands. Timber harvesting treatments would be

undertaken in overstocked and Douglas-fir stands heavily infected by mistletoe, while maintaining selected areas of big game cover.

Thinning treatments, including thin, thin/mistletoe, and thin/mistletoe/aspen treatments would reduce stand basal area to 80-100 ft per acre on approximately 882 acres. Residual canopy cover following treatment would be 35-45%. The thin/mistletoe and thin/mistletoe/aspen treatments would remove small pockets of mistletoe-infected trees, creating small openings in

Table 5. Alternative 1 - Approximate Implementation Timeline

Treatment	**Years 1 - 5**	**Years 6 -10**	**Years 11 - 15**
juniper	642 acres		
range burns	1300 ac		
fencing	6.5 mi		
Total Rx fire- mt shrub, Rx fire, range burns, timber harvest areas, juniper			4836 ac

timber harvest	**Years 1 - 3**	**Years 4 - 7**	**Years 8 - 11**	**Years 12 - 15**
PFA		120 ac		120 ac
Mt Shrub	1st entry 104 ac	1st entry 333 ac		
thin	1st entry 335 ac	1st entry 487 ac	2nd entry 335 ac	2nd entry 487 ac
thin mistletoe	1st entry 92 ac	1st entry 212 ac	2nd entry 92 ac	2nd entry 212 ac
mistletoe	1st entry 280 ac	1st entry 324 ac	2nd entry 280 ac	2nd entry 324 ac

riparian	**Years 1 - 10**	**Years 11 - 15**
LWD_RIP	10.7 mi	
RIP only	0.7 mi	

roads	**Years 1 - 5**	**Years 6 - 10**	**Years 11 - 15**
temp use of closed road	1.3 mi	1.3 mi	
decom exist road	5.1 mi		
new perm road	2.8 mi		
new temp road	1.4 mi		
existing road imp	10.0 mi		
existing open road maintenance	every 3 years		
total open road following treatments	86.9 mi		

the stand. Aspen would be favored over Douglas-fir. Most of the trees to be harvested would be in the 8-20" dbh range. However, trees up to 24" dbh may need to be harvested in order to reduce stand basal area to desired levels and to preclude the spread of mistletoe.

Mistletoe treatments, including mistletoe and patch mistletoe, would be performed on approximately 274 acres currently characterized by high mistletoe infection levels. These treatments would reduce the overall stand basal area to 5-10 ft with a residual conifer canopy cover of 5-10%. Approximately 5-10 down logs and 3 snags per acre would be retained in all of the treated areas. Following harvesting, these areas would be planted with 300 trees per acre. Stands not treated would retain high basal area and canopy cover.

Approximately 243 acres (27%) of the 885 acres currently classified as old forest would be harvested under the mistletoe treatment prescription and converted to young forests with a mountain shrub component. This harvesting would remove most or all of the large old trees in these stands. Further, thinning treatments would be performed on 93 acres (11%) of old forest. Since the thinning would be from below and hence some lower canopy layers would be removed, the large old trees would be retained and the old forest classification would not be changed. Approximately 549 acres (62%) of old forest would not be treated and old forest characteristics would be retained over the short term. Most of these retained old forest stands, however, are heavily infected with mistletoe.

Patch cuts designed to address heavy mistletoe infestation would create 30 2-acre openings in forest stands within the PFAs.

Under this alternative, Douglas-fir stand harvest operations would be conducted on approximately 537 fewer acres than under Alternative 1. With the exception of the post-fledgling family areas, the general fuels management objective for Douglas-fir stands would be to limit on-the-ground fuel loadings to 10 tons per acres, no more than 5 tons per acre of which would be scattered fine fuels.

Douglas fir, aspen, juniper and mountain shrub treatments would be undertaken on some units in just one entry. On these units, broadcast burning, where feasible, would be utilized after the entry to return fire to the ecosystem under managed conditions. Where broadcast burning would not provide desired results safely, “jackpot” burning to remove concentrations of fuels would be performed. On other units, thinning or mistletoe treatments would be undertaken in two entries over the course of 5 to 10 years. On these sites, slash either would be piled and burned or removed offsite following the first entry, depending upon site characteristics and the amount of slash present. Up to 5 tons of scattered fine fuels and 10 tons of all fuel classes per acre would be left in place between entries. Following the second entry on these units, broadcast burning would be utilized to reduce fuel loadings and to reintroduce fire as an ecosystem maintenance agent. If treatments generate excessive fuel loadings, piling and burning would be done to ensure low fire intensities of a later broadcast burn. Treatments may generate up to 30 ton of slash per acre on stands that are overstocked and/or heavily infested with mistletoe.

Acreages of the various planned forest, woodlands and mountain shrub treatments under Alternative 2 are as follows:

Mountain Shrub Treatment - 869 treatment acres. Although trees would be cut on all treatment acres, commercial removal of Douglas-fir timber would be feasible only on 393 acres.

Aspen Treatment - 526 treatment acres. Although trees would be cut on all treatment acres, commercial removal of Douglas-fir timber would be feasible only on 347 acres.

Juniper Treatment - 595 treatment acres.

Douglas fir stands - 1096 acres within immature and mature stands would be treated in accordance with the following treatment types.

- Thin Treatments - 447 treatment acres. Douglas-fir trees would be favored over aspen in this treatment prescription.
- Thin-Mistletoe treatments - 250 treatment acres.
- Thin-Mistletoe-Aspen Treatments - 125 treatment acres.
- Mistletoe Treatments - 180 treatment acres.
- Patch-Mistletoe Treatments - 94 treatment acres.

2.4.2.2 Riparian Treatments

Project design features for timber harvesting, RCAs, roads, prescribed burns, and monitoring incorporate mitigations for the protection of water quality and stream/riparian areas. Specific riparian treatments are as follows:

Large Woody Debris Placement and Riparian Planting - 16.2 miles.

Riparian Planting Only - 13.8 miles.

Riparian Seeding - 6.2 miles.

Noxious Weed Treatments - 7.7 miles.

LWD/RCA Treatments - 3.5 miles.

The restoration would promote pool habitat, increase shade, stabilize streambanks, and reduce sediment production on 19.3 miles of stream. Treatments are not designed to be mutually exclusive; treatment overlap explains why the total restoration mileage figure is lower than the sum of the treatment miles listed above. Along with Alternatives 4 and 5, this alternative proposes the second highest number of miles of restoration.

Under this alternative, aspen would be treated along 3.46 miles of Fox, Hibbard, and Sisley Creeks. These treatments would entail felling fir trees in an existing aspen stand, and using the felled trees as LWD into the creeks to create pool habitat.

On 211 acres, harvest would be delayed until riparian/stream restoration projects have been completed and these areas stabilized. This alternative entails delayed harvest on the second lowest acreage compared to the other alternatives.

2.4.2.3 Roads

Of the various alternatives, this alternative would entail closure of the second highest mileage of roads, the construction of the highest mileage of new roads, and the retention of the second lowest mileage of open roads.

Existing open roads - 80.1 miles of existing open road would remain open under this alternative.

Temporary use of currently closed roads - Pole Creek road east of Big Lookout Mountain and Daly Creek road east of Sugarloaf Mountain, totaling approximately 1.3 miles, would be used temporarily.

Decommission existing roads - The Sisley Creek, Fox Creek, Hibbard to Fox Creek switchback, Gold Creek, Daly Creek, and Snake River Tributary (except Quicksand Creek) roads would be closed, totaling approximately 6.0 miles.

New permanent roads - The Sisley Creek and Fox-Hibbard Ridge roads, totaling approximately 2.8 miles, would be constructed.

New temporary roads - The Sisley Creek Drainage road west of Sisley Creek and a spur road off of and north of the Lookout Mountain Road and south of the Sisley Creek Road, totaling 1.4 miles, would be constructed.

Existing road improvement - 7.9 miles of Morgan Creek, Tent Frames Road and West Fork Hibbard Creek roads will be improved under this alternative.

2.4.3 Alternative 3

2.4.3.1 Forest, Woodlands and Mountain Shrub Communities

The intent of this alternative is to convert selected Douglas-fir stands to mountain shrub-dominated stands with a scattered Douglas-fir overstory, and to enhance the existing mountain shrub community. Treatments also are designed to enhance the aspen/mountain shrub plant communities and open the Douglas-fir stands so as to create a vigorous shrub understory. Prescribed fire, including burning within up to 300 acres of mountain shrub community, would be used to establish a 30-50 year fire return interval. Treatment of mistletoe is not as important under this alternative because the intent is to enhance the aspen/shrub community rather than the Douglas-fir community. Essentially, implementation of this alternative and management primarily for maintenance of the mountain shrub community would result in the reversion to historical vegetation conditions within the GU. Indeed, it is expected that, following treatment, the GU would look much like it did prior to settlement of the area in the late 1800s.

Timber harvesting and prescribed fire would be used to treat approximately 1846 acres (45%) of the area classified as immature, mature, and old forest. Treatments of immature stands would reduce stand basal area to 60-80 ft per acre on approximately 1089 acres (62%), and residual canopy cover following treatment would be 25-35%. Untreated immature stands would continue to be densely stocked, with high canopy cover and little mountain shrub understory. Treatments of mature and old forest stands would reduce the overall stand basal are to 100ft per acre on approximately 637 acres (54%) of those stands, with 20% of the retained basal area being comprised of smaller diameter replacement trees. Approximately 5-10 down logs and 3 snags per acre would be retained in all of the treated areas. Favoring aspen over Douglas-fir would enhance the species diversity in the stands. Further, the treatments on immature and mature Douglas-fir stands would reduce stand basal area to near or below levels recommended by Cochran et al. (1994). Douglas-fir would be removed or heavily thinned from 622 (of 827) acres of aspen stands.

Mistletoe treatments under Alternative 3 effectively would remove mistletoe from stands currently bearing high levels of infection. No infected trees would be retained in treated areas, although untreated areas will contain pockets of infected trees. Buffers around these pockets of retained infected trees would prevent mistletoe from spreading into new stands. Untreated mature and old forest stands would continue to have high infection levels.

Timber harvesting would be conducted on approximately 522 acres (59%) of the 885 acres currently classified as old forest. This harvesting would retain eight large old trees per acre. The large old trees would be the only old forest characteristic remaining, as the thinning would remove some of the lower canopy layers. Approximately 363 acres (41%) of old forest would not be treated, and hence the old forest characteristics would be retained over the short to mid-term.

Table 6. Alternative 2 - Approximate Implementation Timeline

Treatment	Years 1 - 5	Years 6 -10	Years 11 - 15
aspen - non harvest	347 ac		
juniper	595 ac		
range burns	1300 ac		
fencing	6.5 mi		
Total Rx fire- mt shrub, Rx fire, range burns, timber harvest areas, juniper		3871 ac	

timber harvest	Years 1 - 3	Years 4 - 7	Years 8 - 11	Years 12 - 15
PFA		120 ac		120 ac
Mt Shrub	1st entry 149 ac	1st entry 244 ac		
aspen	1st entry 109 ac	1st entry 70 ac		
thin	1st entry 358 ac	1st entry 89 ac	2nd entry 358 ac	2nd entry 89 ac
thin mistletoe	1st entry 85 ac	1st entry 165 ac	2nd entry 85 ac	2nd entry 165 ac
thin mistletoe aspen	1st entry 13 ac	1st entry 112 ac	2nd entry 13 ac	2nd entry 112 ac
mistletoe	1st entry 91 ac	1st entry 89 ac	2nd entry 91 ac	2nd entry 89 ac
mistletoe patch	1st entry 188 ac	1st entry 0 ac	2nd entry 188 ac	2nd entry 0 ac

riparian	Years 1 - 10	Years 11 - 15
LWD_RIP	16.2 mi	
RIP only	13.8 mi	
Noxious weeds	7.7 mi	
Seed	6.2 mi	
LWD/RCA	3.5 mi	

roads	Years 1 - 5	Years 6 - 10	Years 11 - 15
temp use of closed road	1.3 mi	1.3 mi	
decom exist road	6.0 mi		
new perm road	2.8 mi		
new temp road	1.4 mi		
existing road imp	7.9 mi		
existing open road maintenance		every 3 years	
total open road following treatments		80.1 mi	

Patch cuts designed to address heavy mistletoe infestation would create 30 2-acre openings in forest stands within the PFAs.

Approximately 2507 acres of Douglas-fir stands of various ages would be harvested under Alternative 3, by far the most under any of the five action alternatives analyzed. With the exception of the post-fledgling family areas, the general fuels management objective for treated Douglas-fir stands is to limit on-the-ground fuel loadings to 10 tons per acre, no more than 5 tons per acre of which would be scattered fine fuels.

Forest health treatments would be undertaken on some units in just one entry. On these units, broadcast burning, where feasible, would be utilized after the entry to return fire to the ecosystem under managed conditions. Where broadcast burning would not provide desired results safely, "jackpot" burning to remove concentrations of fuels would be performed. On other units, thinning or mistletoe treatments would be undertaken in two entries over the course of 5 to 10 years. On these sites, slash either would be piled and burned or removed offsite following the first entry, depending upon site characteristics and the amount of slash present. Up to 5 tons of scattered fine fuels per acres and no more than 10 tons per acre of all fuel classes would be left in place between entries. Following the second entry on these units, broadcast burning would be utilized to reduce fuel loadings and to reintroduce fire as an ecosystem maintenance agent. If treatments generate excessive fuel loadings, piling and burning would be done to ensure low fire intensities of a later broadcast burn. Treatments may generate up to 30 ton of slash per acre on stands that are overstocked and/or heavily infested with mistletoe.

Overall, approximately 5031 acres would be subject to prescribed burning projects during the first 10-15 years of implementation of this alternative. This would be nearly 1200 more acres than under any of the other alternatives, and indicates an aggressive fire and fuels management approach.

Acreages of the various planned forest, woodlands and mountain shrub treatments under Alternative 3 are as follows:

Mountain Shrub Treatment - 1263 treatment acres. Although trees would be cut on all treatment acres, commercial removal of Douglas-fir timber would be feasible only on 393 acres.

Aspen Treatment - 622 treatment acres. Although trees would be cut on all treatment acres, commercial removal of Douglas-fir timber would be feasible only on 223 acres.

Juniper Treatment - 642 treatment acres.

Douglas fir stands - 1726 acres within immature and mature stands would be treated in accordance with the following specific treatment types.

- Mature stands - 637 treatment acres. Treatments would create open stand conditions with large trees in the overstory and a vigorous shrub/hardwood understory. In upland areas where aspen and Douglas-fir exist in mixed stands, aspen would be favored over Douglas-fir. Stands would be thinned from below, retaining 100 ft of basal area. Basal area reduction would be done in 2 entries. In the first entry, half of the basal area above 100 ft would be removed; the second half would be removed in the second entry. Most of the retention trees would be large, old Douglas-fir trees, although approximately 20 % of the retention basal area would be comprised of younger replacement trees. Prescribed burning would following the second entry.

- Immature stands - 1089 treatment acres. Treatments would create open stand conditions with a vigorous shrub/hardwood understory. The stands would be thinned from below, retaining 60-80 ft of basal area. Thinning would be done in two entries.

In the first entry, half of the basal area would be removed, and the second half would be removed in the second entry. Following the second entry, prescribed fire would be used to help create a mountain shrub understory. In upland areas where aspen and Douglas-fir exist in mixed stands, aspen would be favored over Douglas-fir. Mistletoe would be ignored, and therefore would be retained at low levels.

2.4.3.2 Riparian Treatments

Project design features for timber harvesting, RCAs, roads, prescribed burns, and monitoring incorporate mitigations for the protection of water quality and stream/riparian areas. Specific riparian treatments are as follows:

Large Woody Debris Placement and Riparian Planting - 16.2 miles.

Riparian Planting Only - 8.9 miles.

Riparian Seeding - 11.2 miles.

Noxious Weed Treatments - 0.9 miles.

LWD/RCA Treatments - 2.5 miles.

These riparian restoration activities would promote pool habitat, increase shade, stabilize streambanks, and reduce sediment production on 20.6 miles of stream. Treatments are not designed to be mutually exclusive; treatment overlap explains why the total restoration mileage figure is lower than the sum of the treatment miles listed above. This alternative proposes the highest mileage of restoration.

Under this alternative, aspen would be treated along 2.52 miles of Fox, Hibbard, and Sisley Creeks. These treatments would entail felling fir trees in an existing aspen stand, and using the felled trees as LWD into the creeks to create pool habitat. The existing clone would be protected so as to create, over time, a sustainable aspen stand.

On 294 acres, harvest would be delayed until riparian/stream restoration projects have been completed and these areas stabilized. This alternative entails delayed harvest on the second highest acreage compared to the other alternatives.

2.4.3.3 Roads

Of the various alternatives, this alternative would entail closure of the lowest mileage of roads, the construction of the second lowest mileage of new roads, and the retention of the second highest mileage of open roads.

Existing open roads - 82.5 miles of existing open road would remain open under this alternative.

Temporary use of currently closed roads - Pole Creek road east of Big Lookout Mountain and Daly Creek road east of Sugarloaf Mountain, totaling approximately 1.3 miles, would be used temporarily.

Decommission existing roads - The Sisley Creek, Fox Creek, Hibbard to Fox Creek switchback, Gold Creek, and Snake River Tributary (except Quicksand Creek) roads, totaling approximately 6.2 miles, would be closed.

New permanent roads - The Sisley Creek and Fox-Hibbard Ridge roads would total approximately 2.8 miles.

New temporary roads - The Sisley Creek Drainage road west of Sisley Creek and a spur road off of and north of the Lookout Mountain Road and south of the Sisley Creek Road, totaling 0.6 miles, would be constructed.

Existing road improvement - 6.8 miles of the Morgan Creek, Tent Frames Road, and Hibbard Creek roads would be improved under this alternative.

2.4.4 Alternative 4

2.4.4.1 Forest, Woodlands and Mountain Shrub Communities

This alternative minimizes commercial harvest activities while enhancing wildlife habitat. Emphasis would be placed on maintaining effective cover for big game and enhancing and maintaining existing aspen components.

Timber harvesting and prescribed fire would be used to treat approximately 547 acres (19%) of the immature, mature, and old forest stands. Thinning treatments, including thinning in the PFA and isolated parcels, would reduce stand basal area to levels recommended by Cochran et al. (1994), or 100-120 ft per acre on approximately 214 acres (7%) of these stands, with a residual canopy cover of 45-50% following treatment. No trees greater than 21" dbh would be harvested.

Because this alternative would emphasize maintenance of wildlife hiding and thermal cover, only approximately 427 acres of Douglas fir stands of various ages would undergo forest health treatments. Whereas the general fuels management objectives of the other four action alternatives would be to limit on-the-ground fuel loadings to10 tons per acre in Douglas-fir stands, exclusive of large down logs retained for wildlife needs, such objectives would not be possible under Alternative 4 since only 13 percent of the approximately 3,200 acres of Douglas-fir associations would receive treatment. Moreover, these treatments would be light-handed in nature, and likely would not reduce fuel loadings appreciably.

Prescribed broadcast burning, where feasible, would be utilized after treatment to return fire to Douglas-fir associations under managed conditions. Where broadcast burning would not provide desired results safely, “jackpot” burning to remove concentrations of fuels would be performed. On these sites, slash either would be piled and burned or removed offsite following the first entry, depending upon site characteristics and the amount of slash present.

Timber harvesting would take place on approximately 107 acres (12%) of the 885 acres currently classified as old forest. The timber harvesting would be very light and, again, no trees greater than 21" dbh would be cut. Approximately 778 acres (88%) of old forest would not be treated.

Satisfactory cover treatments would be performed on approximately 104 acres that currently have canopy cover greater than 70%. These treatments would reduce the overall stand basal area to 140-160 ft per acre, with a residual conifer canopy cover of 70 %. Approximately 5-10 down logs and 3 snags per acre would be retained in all of the treated areas.

Marginal cover treatments would treat approximately 169 acres that currently have canopy cover between 50-70%. These treatments would reduce the overall stand basal area to 90-100 ft per
acre and canopy cover to 40%. Approximately 5-10 down logs and 3 snags per acre would be retained in all of the treated areas.

Patch cuts designed to reduce mistletoe infestation would create 30 2-acre openings in PFA forested stands.

Table 7. Alternative 3 - Approximate Implementation Timeline

Treatment	**Years 1 - 5**	**Years 6 -10**	**Years 11 - 15**
aspen - non harvest	399 ac		
juniper	642 ac		
range burns	1300 ac		
fencing	6.5 mi		
Total Rx fire- mt shrub, Rx fire, range burns, timber harvest areas, juniper	5031 ac		

timber harvest	**Years 1 - 3**	**Years 4 - 7**	**Years 8 - 11**	**Years 12 - 15**
PFA		120 ac		120 ac
Mt Shrub	1st entry 140 ac	1st entry 300 ac		
aspen	1st entry 105 ac	1st entry 118 ac		
Immature	1st entry 474 ac	1st entry 615 ac	2nd entry 474 ac	2nd entry 615 ac
Mature	1st entry 247 ac	1st entry 390 ac	2nd entry 247 ac	2nd entry 390 ac

riparian	**Years 1 - 10**	**Years 11 - 15**
LWD_RIP	16.2 mi	
RIP only	8.9 mi	
Noxious weeds	0.9 mi	
Seed	11.2 mi	
LWD/RCA	2.5 mi	

roads	**Years 1 - 5**	**Years 6 - 10**	**Years 11 - 15**
temp use of closed road	1.3 mi	1.3 mi	
decom exist road	6.2 mi		
new perm road	2.8 mi		
new temp road	0.6 mi		
existing road imp	6.8 mi		
existing open road maintenance		every 3 years	
total open road following treatments		82.5 mi	

Because the mountain shrub community is an important summer habitat type, particularly for mule deer, 342 acres of this community would be treated, with Douglas-fir being harvested on only approximately 35 acres.

Juniper treatments would be conducted on 5-72 fewer acres than under Alternatives 1, 2 and 3.

Prescribed burning projects would be performed on approximately 2542 acres under this alternative, or 429-2489 fewer acres than under any of the other action alternatives.

Acreages of the various planned forest, woodlands and mountain shrub treatments under Alternative 4 are as follows:

Mountain Shrub Treatment - 342 treatment acres. Although trees would be cut on all treatment acres, commercial removal of Douglas-fir timber would be feasible only on 35 acres.

Aspen Treatment - 540 treatment acres. Although trees would be cut on all treatment acres, commercial removal of Douglas-fir timber would be feasible only on 191 acres.

Juniper Treatment - 590 treatment acres.

Douglas-fir stands - 427 acres within immature and mature stands would be treated. Management of these stands would be based on big game thermal cover characteristics, as follows:

- Satisfactory Cover - 104 acres. Stands with satisfactory cover would be thinned down to 70% canopy cover, which still would meet the satisfactory cover threshold. Overall, approximately 25% of the area classified as satisfactory cover would be treated. Thinning would be done only where economically feasible. All trees greater than 21" dbh would be retained.

- Marginal Cover Stands - 169 acres. Stands with marginal cover would be thinned to 40% canopy cover. Overall, approximately 25% of the area classified as marginal cover would be treated. Thinning would be done only where economically feasible. All trees greater than 21" dbh would be retained.

- Isolated Stands - 154 acres. Isolated stands less than 30 acres and not connected to stands providing cover would be thinned. These stands do not meet all the criteria necessary to provide satisfactory or marginal thermal cover. Basal area within these stands would be reduced to 100-120 ft per acre. All trees greater than 21" dbh would be retained. Thinning would be done only where economically feasible.

- Hiding cover would be maintained within 200 feet of open roads. Five snags per acre would be created or maintained within treatment areas, and all of the treatments in forested stands would retain at least 14 green trees per acre, thereby ensuring future snag replacement. 120 lineal feet per acre of down logs would be created or maintained within treatment areas. The logs would be greater than 15" in diameter at the large end, and situated in pockets across the treated area. Further, retention trees eventually would become down logs.

2.4.4.2 Riparian Treatments

Project design features for timber harvesting, RCAs, roads, prescribed burns, and monitoring incorporate mitigations for the protection of water quality and stream/riparian areas. Specific riparian treatments are as follows:

Large Woody Debris Placement and Riparian Planting - 16.2 miles.

Riparian Planting Only - 13.8 miles.

Riparian Seeding - 6.2 miles.

Noxious Weed Treatments - 7.7 miles.

LWD/RCA Treatments - 3.5 miles.

These restoration activities would promote pool habitat, increase shade, stabilize streambanks, and reduce sediment production on 19.3 miles of stream. Treatments are not designed to be mutually exclusive; treatment overlap explains why the total restoration mileage figure is lower than the sum of the treatment miles listed above. Along with Alternatives 2 and 5, this alternative proposes the second highest mileage of restoration.

Under this alternative, aspen would be treated along 3.46 miles of Fox, Hibbard, and Sisley Creeks. These treatments would entail felling fir trees in an existing aspen stand, and using the felled trees as LWD into the creeks to create pool habitat. The existing clone would be protected so as to create, over time, a sustainable aspen stand.

On 76 acres, harvest would be delayed until riparian/stream restoration projects have been completed and these areas stabilized. This alternative entails delayed harvest on less acreage than under any other alternative.

2.4.4.3 Roads

Of the various alternatives, this alternative would entail closure of the highest mileage of roads, and the retention of the lowest mileage of open roads, and is the only alternative under which no new roads would be constructed.

Existing open roads - 72.4 miles of existing open road would remain open under this alternative.

Improving Existing Roads - 3.2 miles of Tent Frames Road would be improved.

New Road Construction - No new roads would be constructed.

Decommission Existing Roads - 13.6 miles. The only side roads that would remain open are the roads that access private land in the upper part of the Connor Creek and the southern portion of the Sisley Creek drainages.

The Sisley Creek and Fox Creek roads and the Hibbard Creek Road to the Fox Creek Switch Back would be decommissioned. The West Fork Hibbard Creek road at the intersection with the Lookout Mountain Road to the County road at the BLM boundary also would be closed. The road would be ripped at the top to the point where the road narrows. Prior to road closure, corrective action would be taken to prevent sections of road from carrying running water from springs, as currently occurs. LWD would be placed from the top to where the road narrows, and the road would be seeded at closure with perennial native plants. Additional trees would be felled on the road where it intersects springs so as to encourage restoration of the vegetation needed to stabilize the springs and the wetland environment.

Bassar Diggins Road - The Bassar Diggins Road located in T. 11 S., R. 45 E., Sec. 19, above the campground would be closed. LWD would be placed on the road from the top to the meadow, and the road would be seeded with perennial native plants. The road to the campground would remain open.

2.4.4.4 Wildlife

Fifty to seventy-five percent of sagebrush community uplands would be maintained in class "A" sage grouse nesting habitat condition, defined as greater than 15% sagebrush canopy cover and at least a 15% canopy cover of combined grass/forb understory comprised predominantly of native species. Particularly because most of the analysis area potentially may be appropriate brood rearing habitat, 50% or more of this type of habitat across the analysis area would be maintained.

Bald and golden eagle habitat would be promoted by planting cottonwoods or other large roosting trees along the Snake River. Areas with established roosting trees would be maintained and protected for this use.

At least three snags per acre would be created or maintained within treatment areas. Treatments will not reduce the number of trees per acre to fewer than 26 in any treatment area. As such, all treated forested areas will provide for at least 84% cavity excavator population levels, and future recruitment of snags will be assured.

2.4.4.5 Rangeland Management

Range treatments would be as described above, with the following exceptions and addenda:

Bitterbrush would be planted following prescribed fire projects along the Snake River. In general, bluebunch wheatgrass and other perennials would be planted following prescribed fires to enhance deer and elk winter range forage. Riparian shrubs would be planted and protected to promote optimal winter and summer range for a large variety of wildlife species.

2.4.5 Alternative 5

This alternative was developed with voluntary consideration of ICBEMP science regarding old forest guidelines and objectives and RCA buffers, although an ICBEMP final decision has not yet been issued. The alternative is designed to treat overstocked Douglas-fir stands, to maintain selected areas of big game thermal and hiding cover, to enhance selected areas of mountain shrub communities, and to improve aspen stands in the upper part of Fox and Connor Creeks.

2.4.5.1 Forest, Woodlands and Mountain Shrub Communities

Timber harvesting and prescribed fire would be used to treat approximately 1034 acres, or 35% of the immature, mature, and old forest stands. Harvest treatments would begin in overstocked Douglas-fir stands beset by heavy mistletoe infection, while maintaining selected areas of big game cover. Old forest stands would not be treated.

In areas not classified as old forest, thinning treatments, including thin, thin/mistletoe, thin/mistletoe/aspen and PFA treatments would reduce stand basal area on approximately 825 acres to the levels recommended by Cochran et al. (1994), to wit, 80-100 ft with a residual canopy cover of 35-45%. The thin/mistletoe and thin/mistletoe/aspen treatments would remove small pockets of mistletoe-infected trees, creating small openings in the stand. Aspen would be favored over Douglas-fir. Most of the trees to be harvested would be in the 8-20" dbh range, although trees up to 24" dbh may need to be harvested so as to reduce stand basal area to the desired level.

Table 8. Alternative 4 - Approximate Implementation Timeline

Treatment	Years 1 - 5	Years 6 -10	Years 11 - 15
aspen - non harvest	348 ac		
juniper	590 ac		
range burns	1300 ac		
fencing	6.5 mi		
Total Rx fire- mt shrub, Rx fire, range burns, timber harvest areas, juniper		2542 ac	

timber harvest	Years 1 - 3	Years 4 - 7	Years 8 - 11	Years 12 - 15
PFA		120 ac		120 ac
Mt Shrub	1st entry 35 ac	1st entry 0 ac		
aspen	1st entry 95 ac	1st entry 96 ac		
Isolated	1st entry 70 ac	1st entry 84 ac	2nd entry 474 ac	2nd entry 615 ac
Marginal	1st entry 96 ac	1st entry 73 ac	2nd entry 247 ac	2nd entry 390 ac
Satisfactory	1st entry 26 ac	1st entry 78 ac		

riparian	Years 1 - 10	Years 11 - 15
LWD_RIP	16.2 mi	
RIP only	13.8 mi	
Noxious weeds	7.7 mi	
Seed	6.2 mi	
LWD/RCA	3.5 mi	

roads	Years 1 - 5	Years 6 - 10	Years 11 - 15
temp use of closed road	0.0 mi	0.0 mi	
decom exist road	13.6 mi		
new perm road	0.0 mi		
existing road imp	3.2 mi		
existing open road maintenance		every 3 years	
total open road following treatments		72.4 mi	

Mistletoe treatments, including mistletoe and patch mistletoe, would be performed on approximately 149 acres that currently bear high mistletoe infection levels. These treatments would reduce the overall stand basal area to 5-10 ft per acre, with a residual conifer canopy cover of 5-10%. Approximately 5-10 down logs and 3 snags per acre would be retained in all of the treated areas, and treated areas would be planted with 300 trees per acre.

Patch cuts designed to reduce mistletoe infestation would create 30 2-acre openings in PFA forested stands.

Forest health treatments would be undertaken on some units in just one entry. On these units, broadcast burning, where feasible, would be utilized after the entry to return fire to the ecosystem under managed conditions. Where broadcast burning would not provide desired results safely, "jackpot" burning to remove concentrations of fuels would be performed. On other units, thinning or mistletoe treatments would be undertaken in two entries over the course of 5 to 10 years. On these sites, slash either would be piled and burned or removed offsite following the first entry, depending upon site characteristics and the amount of slash present. Up to 10 tons per acre of fuel, no more than 5 tons per acre of which would be scattered fine fuel, would be left in place between entries. Following the second entry on these units, broadcast burning would be utilized to reduce fuel loadings and to reintroduce fire as an ecosystem maintenance agent. If treatments generate excessive fuel loadings, piling and burning would be done to ensure low fire intensities of a later broadcast burn. Indeed, treatments may generate up to 30 ton of slash per acre on stands that are overstocked and/or heavily infested with mistletoe.

Under this alternative, aspen treatments would include the harvesting of all or most of the Douglas-fir on approximately 148 of these acres. These treatments would help somewhat to reduce the increased wildfire risk that would occur from the fewer forested acres proposed for treatments and the fewer acres planned for prescribed burning. The treatments also would result in decreased fire intensities, allowing for more rapid fire suppression within the aspen stands treated. However, the risk to the untreated Douglas fir stands of a stand replacement fire would remain.

In general, prescribed burning projects would be performed on approximately 3471 acres during the first 10-15 years of implementation under this alternative, or 429-2489 fewer acres than under any of the other action alternatives.

Acreages of the various planned forest, woodlands and mountain shrub treatments under Alternative 5 are as follows:

Mountain Shrub Treatment - 725 treatment acres. Although trees would be cut on all treatment acres, commercial removal of Douglas-fir timber would be feasible only on 319 acres.

Aspen Treatment - 438 treatment acres. Although trees would be cut on all treatment acres, commercial removal of Douglas-fir timber would be feasible only on 148 acres.

Juniper Treatment - 518 treatment acres.

Douglas fir stands - 847 treatment acres within immature and mature stands would be treated according to the following specific treatment types:

- Thin Treatments - 516 treatment acres. Douglas-fir trees would be favored over aspen in this treatment prescription.
- Thin-Mistletoe treatments - 157 treatment acres.
- Thin-Mistletoe-Aspen Treatments - 92 treatment acres.

- Mistletoe Treatments - 14 treatment acres.

- Patch-Mistletoe Treatments - 68 treatment acres.

2.4.5.2 Riparian Treatments

Project design features for timber harvesting, Riparian Habitat Conservation Areas (RHCAs - ICBEMP uses this term instead of RCA), roads, prescribed burns, and monitoring incorporate mitigations for the protection of water quality and stream/riparian areas. Specific riparian treatments are as follows:

Large Woody Debris Placement and Riparian Planting - 16.2 miles.

Riparian Planting Only - 13.8 miles.

Riparian Seeding - 6.2 miles.

Noxious Weed Treatments - 7.7 miles.

LWD/RHCA Treatments - 3.5 miles.

These restoration activities would promote pool habitat, increase shade, stabilize streambanks, and reduce sediment production on 19.3 miles of stream. Treatments are not designed to be mutually exclusive; treatment overlap explains why the total restoration mileage figure is lower than the sum of the treatment miles listed above. Along with Alternatives 2 and 4, this alternative proposes the second highest mileage of restoration.

Under this alternative, aspen would be treated along 3.46 miles of Fox, Hibbard, and Sisley Creeks. These treatments would entail felling fir trees in an existing aspen stand, and using the felled trees as LWD into the creeks to create pool habitat. The existing clone would be protected so as to create, over time, a sustainable aspen stand.
The Interior Columbia Basin Final Environmental Impact Statement Proposed Decision (December 2000) suggests that RCA boundaries be decided in an Ecosystem Analysis at the Watershed Scale (EAWS). An EAWS has not been completed for the Lookout Mountain GU. In such instances, ICBEMP recommends the following RCA boundaries:

Rangeland perennial and intermittent streams - the stream channel and the area on both sides of the stream from the edges of the active channel to the extent of the floodprone width.

Forested perennial streams; and intermittent streams that support fish spawning and rearing - the stream channel and the area on either side of the stream extending from the edges of the active channel to a distance equal to the height of two site-potential trees (approximately 300 feet).

Forested intermittent streams that do not support fish - the stream channel and the area on either side of the stream extending from the edges of the active channel to a distance equal to the height of one site-potential trees (approximately 150 feet).

Ponds, lakes, reservoirs, and wetlands - the body of water or wetland and the area from the edge of the wetland, pond, or lake to the outer edges of riparian vegetation, or to the extent of seasonally saturated soil, or to distance equal to the height of one site-potential tree, whichever is greatest.

On 211 acres, harvest would be delayed until riparian/stream restoration projects have been completed and these areas stabilized. This alternative entails delayed harvest on the second lowest number of acres of all action alternatives.

2.4.5.3 Roads

Of the various alternatives, this alternative would entail closure of the second highest mileage of roads, the construction of the highest mileage of new roads, and the retention of the second lowest mileage of open roads.

Existing open roads - 80.1 miles of existing open road would remain open under this alternative.

Temporary use of currently closed roads - Pole Creek road east of Big Lookout Mountain and Daly Creek road east of Sugarloaf Mountain, totaling approximately 1.3 miles, would be used temporarily.

Decommission existing roads - The Sisley Creek, Fox Creek, Hibbard to Fox Creek switchback, Gold Creek, Daly Creek, and Snake River Tributary (except Quicksand Creek) roads would be closed, totaling approximately 6.0 miles.

New permanent roads - The Sisley Creek and Fox-Hibbard Ridge roads, totaling approximately 2.8 miles, would be constructed.

New temporary roads - The Sisley Creek Drainage road west of Sisley Creek and a spur road off of and north of the Lookout Mountain Road and south of the Sisley Creek Road, totaling 1.4 miles, would be constructed.

Existing road improvement - 7.9 miles of Morgan Creek, Tent Frames Road, and West Fork Hibbard Creek roads would be improved under this alternative.

Table 9. Alternative 5 - Approximate Implementation Timeline

Treatment	Years 1 - 5	Years 6 -10	Years 11 - 15
aspen - non harvest	290 ac		
juniper	518 ac		
range burns	1300 ac		
fencing	6.5 mi		
Total Rx fire- mt shrub, Rx fire, range burns, timber harvest areas, juniper			3404 ac

timber harvest	Years 1 - 3	Years 4 - 7	Years 8 - 11	Years 12 - 15
PFA		120 ac		120 ac
Mt Shrub	1st entry 93 ac	1st entry 226 ac		
aspen	1st entry 86 ac	1st entry 62 ac		
thin	1st entry 353 ac	1st entry 164 ac	2nd entry 353 ac	2nd entry 164 ac
thin mistletoe	1st entry 81 ac	1st entry 77 ac	2nd entry 81 ac	2nd entry 77 ac
thin mistletoe aspen	1st entry 2 ac	1st entry 90 ac	2nd entry 2 ac	2nd entry 90ac
mistletoe	1st entry 10 ac	1st entry 5 ac	2nd entry 10 ac	2nd entry 5 ac
mistletoe patch	1st entry 135 ac	1st entry 0 ac	2nd entry 135 ac	2nd entry 0 ac

riparian	Years 1 - 10	Years 11 - 15
LWD_RIP	16.2 mi	
RIP only	13.8 mi	
Noxious weeds	7.7 mi	
Seed	6.2 mi	
LWD/RHCA	3.5 mi	

roads	Years 1 - 5	Years 6 - 10	Years 11 - 15
temp use of closed road	1.3 mi	1.3 mi	
decom exist road	5.8 mi		
new perm road	3.8 mi		
new temp road	1.4 mi		
existing road imp	7.9 mi		
existing open road maintenance		every 3 years	
total open road following treatments		80.1 mi	

Douglas-fir encroaching upon an aspen stand

3.0 Affected Environment

The purpose of Chapter 3 is to describe relevant resource components of the AA that may be affected by the proposed alternatives. The baseline conditions presented in this chapter form the basis for the discussion of environmental consequences in Chapter 4.

A list of soil types found within the AA is set forth in Appendix A of the Baker Resource Management Plan DEIS (DOI, 1986).

3.1 Forest Vegetation/Forest Management

3.1.1 General

There are approximately 5750 acres of forest land within the Lookout Mountain Geographic Unit (GU), approximately 3200 acres of which are considered commercial and 2550 acres of which are aspen and juniper woodlands. Commercial forest is defined as capable of producing merchantable timber at rates of at least 20 cubic feet per acre per year (ROD, p. 138). Under this definition, "commercial forest" differs from yet overlaps with different "vegetation communities" that contain a component of valuable forest species. The commercial forest land in the GU includes all of the Douglas-fir habitat type and approximately 25% of the shrub/hardwood stands.

Vegetation in the GU changes with elevation. Above 4600 feet, dry sagebrush/grassland habitat yields to a diverse mix of mountain shrub, aspen, juniper, and Douglas-fir communities. Tree stocking diminishes above 6400 feet, and the highest points of the mountain are above treeline.

Very little timber management has been undertaken on BLM lands within the GU. Approximately 290 acres along the main Lookout Mountain Road were subject to a partial cut in the late 1980s. Most of this area had been heavily infected with Douglas-fir dwarf mistletoe prior to harvesting. The appearance of mistletoe brooming has dramatically increased in the retention trees following the partial harvest as a result of increased light and growing space. Another parcel, comprised of 80 acres acquired in Hibbard Creek in the 1960s, also was subject to a partial cut before coming into federal ownership. The remainder of the BLM forest lands have not been harvested. Timber harvesting on the adjacent private forest lands is quite variable, ranging from light partial cuts to extensive harvesting to remove mistletoe infections.

In most of Idaho (west of the central Rocky Mountains) and eastern Oregon, aspen occurs as small, widely scattered stands occupying mesic sites in drainages or subalpine habitats with lodgepole pine. In southeastern Oregon (Steens and Trout Creek Mountains) aspen habitats are associated mostly with Great Basin vegetation types on north slopes or in wet meadows.

The Douglas-fir-aspen-mountain shrub forest communities of the Lookout Mountain area are unique for Oregon and western Idaho in that they represent a bio-geographical island, a western disjunct occurrence of central Rocky Mountain forest vegetation more similar to forests in the mountains near Yellowstone National Park and in Utah than anything found in this region (Johnson; Kagan; Heuter; Geier-Hayes 2002). Unlike nearby areas in the Wallowa, Elkhorn and Blue Mountains, there is little native ponderosa pine and no lodgepole pine, grand fir is restricted to a relatively small area, and aspen is unusually abundant, occupying a relatively large range of sites. Most of the forest sites are classified as Douglas-fir series plant communities, i.e., Douglas-fir is the dominant climax vegetation. However, depending on the occurrence of natural fire or insect and disease infestations that tend to thin or eliminate conifers, aspen or mountain shrub vegetation may dominate sites for extended periods of time. Indeed, aspen potentially is a long-term dominant species on 2000-4000 acres in the AA.

Fire history information gathered on Lookout Mountain indicates that major stand replacing fires occurred on 80-100 year intervals prior to the late 1800s. Over the last century there has been virtually no fire disturbance in the Douglas-fir stands, and hence the average age of the conifer forest is approximately 100 years.

Fire suppression during the past century has prevented fire from playing its natural role as an agent of ecosystem cleansing and health. Prior to suppression, Douglas-fir, western larch and grand fir generally occupied open stands of widely spaced trees with a mountain shrub understory.

3.1.2 Vegetation Communities

The preparation of the Baker RMP relied upon forest structure data that was, at the time, twenty years old and incomplete. The ROD states that 2200 acres of commercial forest land and 2000 acres of woodlands exist in the Lookout Mountain Geographic Unit (p. 55). In preparation for the current analysis, the forest and woodland areas in the GU were re-inventoried, and the following descriptions were used to describe and categorize endemic vegetation. It should be noted that there is a wide range of species composition and structure within each category.

3.1.2.1 Mountain Shrub - 2154 acres

Historically, this vegetation type, along with aspen, probably dominated much of the upper elevations of the GU. Mountain shrub communities are distinguished by the canopy dominance of one or more shrubs such as chokecherry, bitter cherry, mountain big sagebrush, or snowberry, but also may include aspen, juniper, and Douglas-fir components and stringers.

On dry sites, mountain snowberry dominates, intergrading with the sagebrush/bunchgrass habitat. On moist sites, the number of bitter cherry, chokecherry, mountain maple, elderberry, and ninebark increase. Signs of stand deterioration include the existence of only one or two age classes of shrubs, widely spaced or hedged (heavily browsed) shrubs with little reproduction, increasing mortality, invasion by rabbitbrush, and open, trampled understory. With the elimination of fire as an agent of ecosystem health through active fire suppression, historically dominant mountain shrub and aspen communities have been dominated and shaded out by dense Douglas-fir stands. Many of these stands now are dominated by old, decadent shrubs and aspen and/or young to mature Douglas-fir, mountain big sagebrush and juniper. By contrast, Douglas-fir and juniper historically were widely scattered, minor stand components in the area.

3.1.2.2 Aspen - 827 acres

In general, aspen occupies a relatively large range of sites on Lookout Mountain, and is a potential long-term dominant species on 2000-4000 acres. Aspen stands occur in small pockets from about 3400 feet on north slopes and in shaded, moist canyons, but are a major forest component above 4800 feet elevation. The understory in riparian aspen stands may be comprised of a mixture of mountain shrubs or shrub/riparian/wet meadow vegetation. Aspen may occur in pure stands or as a component of Douglas-fir stands. Many aspen clones have been invaded by Douglas-fir or juniper, or have been almost completely overtopped and shaded out by Douglas-fir. A few healthy multi-storied, multi-aged stands of aspen exist. However, a combination of lack of fire and grazing pressure in the aspen communities has contributed to the old and decadent condition of many stands, and has contributed to the invasion by conifers. Further, down-cutting of small streams has impacted riparian aspen stands by lowering the level of available soil moisture. Signs of deterioration include excessive levels of stem decay and mortality, the existence of only one or two age classes of trees, and widely spaced trees with little reproduction. Although there are some young stands of aspen scattered around the mountain, little regeneration occurs in most of the older stands. Observations since the mid 1960s indicate that aspen stands increase in size and invade open meadows in response to a reduction in grazing pressure. Indeed, changes in livestock management were at least partially responsible for the release of aspen trees in the late 1980s.

3.1.2.3 Juniper - 1876 acres

Juniper in the GU occurs mainly in lower to mid elevation forest areas. The juniper/curl-leaf mountain mahogany/Nevada greasebush plant community is the potential natural juniper community on much of the limestone bedrock outcrop in the GU and, indeed, approximately 986 acres of the area classified as juniper is located on such outcrops. Another 890 acres of woodland and rangeland sites with juniper canopy cover significant enough to see on aerial photographs were also classified as the juniper habitat type for purposes of this document. Historically, frequent fire helped to maintain open juniper stand conditions by killing juniper seedlings and saplings, thereby reducing the spread and limiting density in juniper stands. Juniper trees under forty years old are susceptible to fire-related mortality, while most larger and older junipers survive low-intensity fire (Gedney, 1999). Stocking levels within juniper stands have increased with fire exclusion. Lack of fire has allowed juniper to expand from its historic habitat of rocky ridges into Douglas-fir and aspen stands and lower elevation rangeland. Juniper also has proliferated in mountain shrub communities, where it naturally is a small component. Indicators of this expansion include a high percentage of mortality or decadence in associated understory species, remnant suppressed aspen or mountain shrubs, and an all age class distribution of juniper, usually with oldest trees on ridgetops and successively younger trees further downslope. Stocking levels within existing juniper stands range from widely scattered trees to dense stands. Large old juniper trees are restricted to more typical rocky habitats where grasses and shrubs are sparse, providing a natural fuel break.

3.1.2.4 Douglas-fir - 2927 acres

Considerable variation exists within Douglas-fir communities; Douglas-fir stands in the southern portion of the forest area are relatively young, dense, and even-aged with widely scattered large diameter older trees. Stocking levels in these young stands have become so dense that little understory vegetation persists. These stands have dead remnants of large, old chokecherry and bitter cherry, indicating that a mountain shrub community previously occupied the site. On the other hand, stands in the northern portion of the GU have numerous larger and older trees, and stocking levels ranging from widely scattered old trees to dense stands of young trees. Within most of the dense young stands there are no indicators that a forest previously existed, such as large down logs and snags or charred logs. Some of the older stands have charred logs and living western larch, both of which are indicators that forests historically existed there. Because most of the stands in the GU are relatively young, there are only a small number of large diameter snags. Prior to fire exclusion, aspen and mountain shrub communities probably dominated many areas that are now occupied mainly by Douglas-fir.

For analysis purposes, the Douglas-fir vegetation community has been divided into three distinct classes, as follows:

Old Forest - 885 acres - For this analysis, the old forest definition proposed by ICBEMP was used. Douglas-fir stands that have at least 8 trees per acre that are 150 years old and are greater than 21 inches dbh are characterized as old forest. Other characteristics such as number of canopy layers, number of snags and down logs, and tree decadence also were considered (USDA, 1993). The largest trees are 30-40 inches dbh, but because most of the forest stands in the GU are relatively young for old forests, not much tree decadence is present. Older trees generally have broad crowns and a large branching form, indicating growth under open stand conditions. Some stands may still be somewhat open, with mountain shrub/aspen components. Other stands have closed in with young trees that have suppressed the mountain shrub/aspen components. Very few stands appear to show direct evidence of long-term canopy dominance by Douglas-fir. This evidence includes presence of large down logs and charcoal which would indicate there had been some form of fire. These same stands have varying degrees of mistletoe infestation, but most have a high level of infection. Since Douglas-fir dwarf mistletoe does not become established quickly in new stands, presence of dwarf mistletoe indicates that there were infected trees on these sites historically, and therefore the historic range of Douglas-fir can be approximated by the current range of mistletoe infection. The Baker RMP precludes timber harvesting on economically non-operable land so as to contribute to the sustenance of old forest levels.

Mature - 290 acres - These stands are similar to old forest stands. The oldest trees in these stands are 120-150 years old. The largest trees are 24-32 in diameter. Older trees generally have broad crowns and a large branching form, indicating growth under open stand conditions. Some stands may still be somewhat open, with mountain shrub/aspen components. Other stands have closed in with young trees that have suppressed the mountain shrub/aspen components. As with the Old Forest stands, very few stands offer direct evidence of long-term canopy dominance by Douglas-fir. This evidence would include the presence of large down logs and charcoal, which would indicate the presence of fire. These mature stands have varying degrees of mistletoe infestation, with most bearing a high level of infection.

Immature - 1752 acres - These stands are dominated by Douglas-fir trees mainly less than 120 years old. In general, these stands are dense, with average stand basal area from 160ft - 200ft per acre and canopy cover in the 75%-95% range. Fire exclusion has allowed these stands to expand into and dominate mountain shrub/aspen habitat over the last 100 years, although stands with more open canopy cover have a

mountain shrub understory. In stands where the canopy has closed, very little understory vegetation persists. Most immature stands have very little mistletoe infection, although several stands are heavily infected. Immature stands may have 1-5 large old scattered Douglas-fir trees.

3.2 Forest Insects and Disease

In 1996 and 1997, forest stands in the Lookout Mountain area were examined by Don Scott, Zone Entomologist, and Craig Schmitt, Zone Pathologist, of the Blue Mountain Pest Management Zone, Wallowa-Whitman National Forest. They determined the major forest health concerns in the Lookout Mountain area are Douglas-fir mistletoe, *Arceuthobium douglasii*, and Douglas-fir bark beetle, *Dendroctonus pseudotsugae* (Schmitt and Scott 1996, Schmitt 1997). Douglas-fir mistletoe is a concern because of current high infection levels, continuous forest stands dominated by Douglas-fir, which combined factors would facilitate increasing infestation. Douglas-fir bark beetle is a concern because many of the Douglas-fir stands have extremely high stocking levels, and Douglas-fir beetles already have killed pockets of trees.

3.2.1 Douglas-fir Dwarf Mistletoe

Douglas-fir dwarf mistletoe (*Arceuthobium douglasii*) is a parasitic plant that infects Douglas-fir trees. Infected trees are damaged so that they allocate food and water to witches broom (masses of ball-shaped growths on branches) development and supporting the mistletoe system instead of toward tree growth. Tree branch brooms do not develop fully until infested trees are exposed to plenty of light, and the level of brooming is proportional to the level of infestation. The result of this infection is a reduction in tree growth and vigor (Schmitt 1997). Trees weakened by mistletoe are particularly susceptible to Douglas-fir beetle attack during periods of stress, such as drought.

In the Big Lookout Mountain area, Douglas-fir dwarf mistletoe occurs to varying degrees throughout Douglas-fir stands. In the southern portion of the area, infection levels generally are relatively low while in the northern areas, infection levels tend to be relatively high. Over the GU, 30% of the Douglas-fir stands have a low level of infection, 6% have a moderate level, 34 % have a high level, and 29% of the stands have no infection.

High Douglas-fir dwarf mistletoe infestation levels in the northern portion of the AA is an indication that Douglas-fir and dwarf mistletoe have coexisted in the area for centuries. Frequent low-intensity fires maintained open stand conditions and killed mistletoe brooms in lower tree branches. Under these condition, Douglas-fir swarf mistletoe existed at much lower levels than it does today. Exclusion of fire has allowed the Douglas-fir stands to become dense, multi-layered stands, which are prone to mistletoe spread because mistletoe seeds produced high in the canopy infect trees lower in the canopy.

Mistletoe moves relatively slowly through Douglas-fir stands. The infection is spread by seeds ejected from infected to uninfected trees. The range of ejected seeds is less than 50 feet. Douglas-fir mistletoe will not infect other tree species such as wester larch or aspen. The predominance of the Douglas-fir host type and multi-layered canopy of Douglas-fir stands in the Lookout Mountain area favor the spread and development of heavy levels of mistletoe infection over time.

Dwarf mistletoe can be beneficial for some objectives and detrimental to others. Broomed trees provide habitat for some birds and small mammals, and plants are a minor supplementary food source for others (Schmitt 1997). On the other hand, stands no longer are healthy when dwarf mistletoe levels become excessive, as heavy infection increases susceptibility to insect infestation, mortality, and the risk of stand replacement fire.

Mistletoe infection can be effectively removed from stands with a low level of infection by removing infected individual trees and small clumps of trees with commercial thinning. Effectively treating heavily infected monocultural stands would require that all infected hosts be removed and the area reforested. Meeting various resource objectives may require the retention of some infected trees within treatment blocks. This should be designed in a manner which minimizes potential for spread to healthy trees and uninfected portions of the stand. The recommended procedure for meeting this objective is to isolate selected infected reserve trees in small groups or clumps. Non-host or unstocked buffers with at least 50 feet between infected trees and uninfected residuals also can be used.

3.2.2 Douglas-fir Bark Beetle

Douglas-fir bark beetle populations can build up in trees weakened by mistletoe and in stands stressed by overstocking. According to a rating system developed to assess forest stands' risk of Douglas-fir bark beetle attack, the continuous, dense Douglas-fir stands in the AA are highly susceptible to attack by this insect. Indeed, there currently is some beetle activity in these stands. As these stands grow and the stand density increases, the risk of insect attack will increase. The risk of attack also will increase during periods of stress, e.g., during drought conditions, after injury by fire, or should defoliating insects become active in stands. Douglas-fir bark beetles prefer to attack trees in stands that are cool, have low light conditions, and with little air movement. The also prefer larger trees over smaller trees. Old Forest trees could be at risk if a Douglas-fir beetle outbreak were to develop in the dense young stands (personal communication, Scott, D. L,. November 20, 2001).

Recent research by Cochran et al. (1994) recommends specific stocking levels to keep stands healthy and growing, avoid suppressed and stagnated trees, while maintaining the stand at low risk to bark beetle attack. For the plant associations in the project area, Cochran's guidelines recommend stocking levels of 80 ft to 100 ft of basal area per acre. The basal areas within the project area average 160 ft - 240 ft of basal area per acre.

3.3 Fire/Fuels

Historically, the Lookout Mountain GU was subject to frequent, low intensity fires over a broad area. This frequent fire interval precluded a buildup of fuel loadings in most vegetation communities, pruned lower limbs and consumed ladder fuels, thereby reducing the probability of catastrophic stand replacement fires. Active fire suppression and livestock grazing beginning in the late 1800s has resulted in a buildup of fuels, high stand densities, and the predominance of young trees. Recent fuels inventories in Douglas-fir stands in the GU indicate that these sites are extremely at risk of stand replacement fires during the summer. Although knowledge of the long-term fire history within the AA is limited, recent fire history in and adjacent to the AA indicate the occurrence of numerous lightening and human-caused fires over the last decade, the largest being the 2500-acre Morgan Mountain fire in the summer of 2001.

Areas within the GU above 4500 feet in elevation have diverged from their historic composition, in that they no longer are dominated by mountain shrub communities and aspen with some scattered Douglas-fir, and Douglas-fir stands situated mainly on north aspects. Douglas-fir has encroached upon many mountain shrub and aspen sites, and juniper significantly has expanded into other vegetation communities over the past several decades, due in large part to the lack of fire. Had aggressive fire suppression not been introduced to the area, fires would have limited the Douglas-fir associations primarily to cooler, moister north aspects throughout the GU. Periodically, a moderate or intense fire would have burned through these pockets of heavier fuels, resulting in stand replacement. Fire also would have limited the expansion of juniper.

3.4 Range/Grazing

Guidance for the Lookout Mountain Analysis Area was set forth in the Baker Resource Area RMP for Grazing Management (RMP 1989. Pages 55-57).

The AA contains approximately 18,250 acres of Snake River Breaks native bunchgrass/ sagebrush steppe vegetation, with 5000 acres of cheatgrass and/or medusahead on lower slopes and benches near the Snake River within this vegetation type. Active fire suppression and prevention during the past half century combined with overgrazing from the 1890s through the early 1960s has prevented fire from playing its natural role in maintaining healthy rangeland conditions in most of the AA. This lack of fire has resulted in the current domination of some range sites by sagebrush, that excludes or greatly reduces other desirable plant species. Much of this sagebrush now is decadent, with substantial mortality in places. Smaller fires from 1/10th of an acre to 200 acres have occurred occasionally since the mid-1970s. These fires generally have been beneficial in the long term in reducing the sagebrush overstory and competition with native bunchgrasses and forbs. This has allowed for improved vigor in these species, resulting in increased ground cover and better watershed health.

The only recent wildfire with clearly discernable negative resource impacts was the Morgan Creek Fire in 1996. This fire occurred on a steep rocky shale-schist south exposure slope in poor condition with a composition of mostly annual bromes with a small perennial Sandberg's Bluegrass component. As a result of the fire, Scotch Thistle has moved up this slope out of the bottom of Morgan Creek due to a lack of competition.

Livestock grazing is a prominent feature of the AA. Currently, four allotments comprised of 21 pastures totaling 23,502 acres of public land are in use. These allotments are used by seven permittees for a total of 2672 Animal Unit Months (AUMs). All permittees utilize either a deferred rotation or seasonal grazing system, and limit grazing to the period between mid-April and mid-November.

Microbiotic crusts have not been identified on range sites within the AA, although their scattered presence is possible. In the event that such crusts are found, mitigating measures will be applied as discussed in Section 4.13 of this document. These mitigation measures will be undertaken in accordance with BLM directives (USDI, 2001c).

3.5 Watershed and Fisheries

A complete fisheries analysis for the Lookout Mountain AA is attached hereto as Appendix 5.

3.5.1 Fish Species

As confirmed by a 1990 ODFW fish sampling survey, the Burnt River and its tributaries support native runs of rainbow and redband trout, although their historical population levels have been reduced with the loss of available habitat and blockage by dams on the Snake River (Currens, 1991). ODFW hasn't stocked the Burnt River or its tributaries with rainbow trout for angling purposes since 1980. The Burnt River supported anadromous fish runs until dams were constructed on the Snake River. In the 1920s and 1930s the Burnt River had a good trout fishery, with 20-inch fish not uncommon (Gildemeister 1992). Chinook salmon and steelhead migrated up the Burnt River until the Unity Reservoir dam was constructed in 1929.

Bull trout have never been verified in the Burnt River system (Hooton 1993), although they occur in surrounding sub-basins. Sampling during the 1990 ODFW fisheries survey failed to locate any bull trout (Hooton 1993). An extensive survey needs to be conducted in this watershed to verify the existence or non-existence of bull trout.

The Snake River supported large runs of salmon and steelhead prior to dam construction on the Middle Snake River. All of the natural runs of fish were eliminated up the Powder River, the Burnt River and into Pine Valley (Gildemeister 1992) with the construction of Brownlee Dam in 1959, Oxbow Dam in 1961 and Hells Canyon Dam in 1968.

3.5.1.1 Federally Listed Fish Species

The redband trout is a BLM "Bureau Sensitive" species, and the FWS lists the species as a "Species of Concern". Bull trout are listed as "Threatened" (USDI 1998), but habitat conditions are not favorable for bull trout in the Burnt River watershed or in Brownlee Reservoir. They are probably extirpated from this system (Ratliff and Howell 1992).

New surveys indicate that native redband trout are the dominate species of trout in our streams. Further, as new surveys are conducted, a higher percentage of redband trout are being distinguished from the rainbow trout, although it should be noted that there may be some rainbow trout at the confluences of fish-producing tributaries that have migrated upstream from the Burnt River.

3.5.1.2 Other Fish Species of Interest

Rainbow Trout - The rainbow trout is a representative of resident fish and habitat requirements that favor spawning and rearing of smolt. Primary indicators of rainbow trout habitat include water temperature, water quality, timing and quantity of peak stream flows, and physical stream and riparian habitat characteristics. Rainbow trout ideally require stream temperatures of 2.2 - 20 degrees C (36-68 degrees F) for proper spawning and egg development, with ideal temperature between 50-65 degrees F. Good water quality is essential for migration, and spawning and rearing habitat. Water should have a high concentration of dissolved oxygen and low turbidity. Rainbow trout spawning occurs after spring runoff, when water flow is still high and stream temperatures are normal (<50° F.). The quality and quantity of the habitat sets the limit on the number of fish that can be produced (Reiser and Bjornn 1979).

Redband Trout - The entire group of redband/rainbow trout recently have been classified into the rainbow grouping *Oncorhynchus mykiss gibbsi*. Redband/rainbow trout is the interior (inland) rainbow trout which can be differentiated from the coastal rainbow both electrophoretically and by meristic character differences such as the very fine scales and extra row of teeth on the tongue. Redband/rainbow trout have been listed as a Bureau Sensitive species because their populations have diminished from historical levels. Introductions of hatchery rainbow trout and subsequent hybridization have largely eliminated pure redband trout populations in much of their original range (Bacon, Brouha, Rode, Staley, 1980). The redband/rainbow now is found only in isolated sections of its historical habitat.

Redband/rainbow are similar to brook trout (Salvelinus fontinalis) in that both require relatively the same food, space, cover, and individual territories that are afforded by the riffles and small pools of headwater streams (Bacon et al. 1980). The redband/rainbow appear to

Table 10. Stream Miles by Category in the AA

Stream Category	Miles
Category 1	12.28
Category 2	40.14
Category 3	4.15
Category 4	12.13
Totals	68.70

tolerate higher siltation conditions and select lower water velocity situations than typical for most trout. Further, the redband/rainbow trout appear to be more tolerant of high water temperatures than other salmonids. Some redband/rainbow populations in the desert basins of southeast Oregon have adapted to very high water temperatures and are known to inhabit intermittent, stagnant streams with temperatures as high as 83° F. (Behnke 1979).

3.5.2 Fish Habitat - Subbasins

Streams in this analysis area flow into the Burnt River, the Snake River, and the Powder River Subbasins. Water bodies are categorized as fish-bearing (Category 1), permanently flowing non-fish-bearing (Category 2), ponds, lakes, reservoirs and wetlands greater than one acre (Category 3), or seasonally flowing or intermittent streams, wetlands less than one acre, and landslides and landslide-prone areas (Category 4). The table below sets forth the mileage of water body, by category, that is present in the AA:

PFC surveys have been completed on many stream segments within the AA. Results of these surveys are summarized by subbasin the following text. Detailed survey results and recommendations are included in the appendices.

3.5.2.1 Burnt River Subbasin

The Burnt River is a tributary to the Snake River. Historically, the Burnt River supported native runs of steelhead and chinook salmon. Construction of dams has eliminated the natural flow of water in the Burnt River and there is no passage for fish. Water is controlled by the dams and is diverted for agricultural purposes. The Burnt River is on the DEQ 303(d) list for flow modification and stream temperature. Much of the main river fails to provide adequate fish habitat for any of the native trout species or other cold-water fish or aquatic species. Perennial tributaries from the Lookout Mountain area that flow into the Burnt River include Sisley Creek and Gold Creek. Of these two perennial streams, only Sisley Creek is fish-bearing.

3.5.2.2 Burnt River Tributaries

Of the Burnt River watershed tributaries, only the upper headwaters of Spring Gulch is rated as Proper Functioning Condition (PFC). Sisley Creek and Gold Creek are rated as functional-at-risk-downward trend (FARD). These creeks are characterized by incised channels, poor or absent riparian vegetation, much bare soil, unstable streambanks, limited floodplain development, a lack of large woody debris and significant sedimentation. See Appendix 5 for detailed information regarding PFC survey results for all streams.

3.5.2.3 Brownlee Reservoir Subbasin

The Snake River is backed up for approximately 50 miles by the Brownlee Dam, which prevents the formation of a natural stream channel. Upstream migration of native anadromous fish is blocked further downriver by the Hells Canyon Dam. The Snake River (Brownlee Reservoir) is on the DEQ 303(d) list for stream temperature and toxics. Perennial tributaries from the Lookout Mountain area that flow into the Snake River include Morgan Creek, Hibbard Creek, Fox Creek, Conner Creek, Douglas Creek, Magpie Gulch, Little Deacon Creek, Soda Creek, Dry Creek, Pole Gulch, Spring Gulch and Snake Tributary #1. Of these perennial streams, Morgan, Hibbard, Fox and Conner Creeks are the only known fish-bearing streams in the AA.

3.5.2.4 Snake River Tributaries

In general, the Snake River watershed tributaries are in poor condition. Only Magpie Gulch, Little Deacon Creek, Soda Creek, Snake River Tributary #1, and the upper headwaters of Spring Gulch, all of which are exceedingly short, and limited stretches of Morgan and

Hibbard Creeks are rated as PFC. These watercourses, which comprise only a fraction of the stream miles in the AA, are characterized by good sinuosity, balanced width/depth ratios, adequate large woody debris, stable streambanks, and adequate riparian vegetation. Dry Creek and Douglas Creek is rated as FARN, with deep channel incision, limited riparian vegetation, and limited mature hardwoods with no reproduction, but also good sinuosity and a balanced width/depth ratio. The upper section of Dry Creek is stable and bears adequate vegetation, although said vegetation is mostly mature, with little reproduction. The lower reaches of Conner Creek are rated as functional-at-risk-upward trend (FARU), with a balanced width/depth ratio and adequate vegetation contributing to streambank stability. The remaining streams, including the lower reaches of Spring Gulch, are rated as FARD, with the exception of Heiney Creek, which is rated as Non-functional (NF). The FARD streams generally are characterized by severe incision and down-cutting, unbalanced width/depth ratios, poor floodplain development, vegetation that is either absent or inadequate to protect streambanks against erosion during high flow, high levels of sedimentation, a dropping of the water table, and absent large woody debris. Where present, aspen are in poor condition and hardwoods are mature, with no reproduction. Riparian and wetland areas associated with the FARD streams have been degraded mainly by trampling, overgrazing and the construction of roads immediately adjacent to stream channels.

3.5.2.5 Powder River Subbasin

The Powder River is a tributary to the Snake River. Historically, the Powder River supported native runs of steelhead and chinook salmon. Construction of dams has eliminated the natural flow of water in the Powder River and there is no passage for fish through or around the dams. Water in this portion of the Powder River is backed up by the Brownlee Reservoir. The Powder is on the DEQ 303(d) list for stream temperature, bacteria, dissolved oxygen and flow modification, and much of the main river fails to provide adequate fish habitat for any of the native trout species or other cold-water fish or aquatic species. The Daly Creek sub-watershed is on the south side of the river before the confluence with the Snake. Daly Creek is the only perennial trib stability, and grazing impacts such as reduced riparian and wetland vegetation. Hardwoods, where found, are in poor condition; there is some aspen reproduction, but the cottonwoods are old and decadent. Willow and alder are nearly nonexistent.

3.5.3 Stream Temperatures

The Burnt River and the Snake River have been exhibiting high stream temperatures for many years. Currently both rivers are on the Oregon State 303(d) list for high stream temperatures. Early records from 1958-59 (ODFW records) shows the Burnt River had stream temperatures of 70-81 degrees F. from July through October.

The BLM has monitored some streams in the AA for temperature. In 2001, Connor, Fox and Morgan Creeks, all tributaries of the Snake River, and Sisley Creek, a tributary of the Burnt River, were monitored for temperature. Only Morgan Creek exceeded the 64°F 7-day maximum average temperature set by DEQ. The 2001 temperature monitoring results are set forth in the following table:

The federal Clean Water Act (CWA) requires states to develop Total Maximum Daily Load (TMDL) standards for waters on the 3.03(d) list. Oregon and Idaho have prepared a draft TMDL for the Snake River (Snake River-Hells Canyon TMDL Draft, 2001). Included in the TMDL is a Water Quality Management Plan (WQMP) that provides specific recommendations for addressing the pollutants for which the water bodies are listed. The BLM also has a plan for managing 3.03(d) listed streams on BLM-administered land (USFS/BLM, 1999). The BLM will continue to implement the 303(d) Protocol for waters on the State's 303(d) list of affected waters. The Protocol provides a framework for planning and implementing water quality protection and restoration objectives. Under the Protocol, the

Table 11. Subbasins, Watersheds and Subwatersheds in the Lookout GU

Subbasin	Watershed	Subwatershed
Brownlee Reservoir	Brownlee	Raft-Soda
	Wolf-Connor	Connor Creek
		Fox-Trail
		Morgan Creek
		Sumac-Douglas
Burnt River	Lower Burnt River	Chimney Creek
		Manning Creek
		Sisley Creek
		Swayze Creek
Powder River	Lower Powder River	Daly Creek

Table 12. 2001 Temperature Monitoring Results

Stream Name	7-Day Maximum Stream Temperature (Degrees Fahrenheit)
Connor Creek	60.3
Fox Creek	61.0
Morgan Creek	72.4
Sisley Creek	63.3

BLM will develop Water Quality Restoration Plans (WQRPs) that will include protective and restorative measures to achieve and ensure compliance with state water quality standards. Use of the protocol framework entails the development of information necessary to define, implement and monitor best management practices and protective, restorative and/or mitigation measures. The WQRP developed through the use of protocol framework will outline the BLM's water quality restoration strategy for the AA, including a timeline and a list of funding sources. The BLM believes that this approach is consistent with and supports the State's antidegradation policy. The BLM understands that the intent of the policy is to protect water from unnecessary degradation from point and non-point pollution sources as well as to maintain and/or enhance water quality so as to protect all existing beneficial uses. However, the BLM's goal is not simply to achieve conformity with state water quality standards, particularly because adoption of these standards does not require an assessment of the inherent capabilities and limitations of ecosystems or the dominant interactive and synergistic processes that drive watershed function. Rather, the BLM intends to go above and beyond state requirements by assessing these factors.

Although there are no 303(d) listed streams within the AA, there are tributaries that flow out of the AA into such listed streams. In the TMDL process, these tributaries may be identified as contributing to the problem for which the stream is listed, and/or recommendations may be made to improve water quality in these tributaries before they meet the 303(d) listed stream segment. In such instances, the WQMP will set forth the measures that must be taken to address water quality problems on federal lands. As mentioned above, the Snake River currently is the subject of a draft TMDL, and the BLM will provide input and guidance for inclusion in the final TMDL document and the WQMP.

Tributary streams originating in the AA also flow into the Burnt and Powder Rivers, both of which are on Oregon's 303(d) list. The Oregon Department of Environmental Quality has slated both of these subbasins for TMDL development beginning in 2005.

3.5.4 Stream Sediment

Suspended and deposited sediment can adversely affect salmonid rearing habitat if present in excessive amounts (see Reiser and Bjornn 1979; Koski 1966). Further, the indirect effects of excessive fine sedimentation damage fish populations (Codone and Kelley 1961).

Many of the streams in the AA create sediment downstream to the Burnt River and the Snake River. For many years, both rivers have been over-producing sediment. This excessive sediment, in turn has affected the complete life cycle of native cold water fish, and the rivers have begun to favor warm water fish that can tolerate higher temperatures and low quality water rather than the native trout species that require cool, clean water. Further, the Snake River no longer is a free-flowing river, but instead is impounded by three dams in this area. With no passage at any of the three dams, there is no natural migration route for any fish species into the Snake River and its tributaries. Moreover, the Brownlee Reservoir essentially is a large sediment trap for all its upstream tributaries in Oregon and Idaho. That sediment has removed available spawning habitat and decreased the chances of egg survival for all cold water fish species. It must be noted that, due to the steepness of the surrounding topography, and the frequent occurrence of high intensity thunderstorms, many of the streams in the AA would produce sediment naturally, even if they were in ideal condition. However, the poor condition of these waterways is the primary cause of excessive sedimentation.

3.5.5 Water Quality

The 1988 Oregon Statewide Assessment of Nonpoint Sources of Water Pollution listed the Burnt River as having severe water quality conditions and pollution problems. The most commonly cited causes of beneficial use degradation were vegetation removal in the riparian area, thus removing the thermal protection for the streams, and creating surface erosion (DEQ 1988). The land uses most commonly cited in connection with these problems were livestock grazing, vegetation management, forestry related road construction, and timber management.

There currently are no streams within the AA that are listed on Oregon's Final 1998 Water Quality Limited Streams - 303(d) List (DEQ, 1998). However, streams within the AA, i.e., the Burnt River, Powder River and Snake River (Brownlee Reservoir) flow into 303(d) listed streams. The following table indicates the parameters for which the above rivers are listed in the stream segment closest to the AA:

3.5.6 Water Storage and Runoff

Streamflow is dependent upon the amount of snow deposited in the watershed, the ability of the watershed to capture and hold snow, and the ability for springs, bogs and wet meadows to

Table 13. 303(d) Listed Streams Near the Lookout AA

Stream Category	Listing Parameters
Burnt River	Flow Modification and Temperature
Powder River	Bacteria, Dissolved Oxygen, Flow Modification and Temperature
Snake River (Brownlee Reservoir)	Temperature and Toxics

store water and supply water during summer months. The watersheds in the AA have a limited ability to capture and hold snow due to natural geology and previous land management activities. Large openings in the forest canopy increase the amount of snow releasing at one time and earlier than normal, as evidenced by the down-cutting that has occurred in portions of high-gradient streams.

3.5.7 Riparian and Stream Channel

A brief description of common riparian vegetation and stream channel condition is included in this section. Detailed information on individual streams including plant lists, channel conditions and recommendations are available in the PFC and Standards and Guidelines forms located at the Baker Resource Area Office. Further, Appendix 5 contains a summary of PFC results including PFC ratings, vegetation descriptions and recommendations for individual streams in the AA.

Generally, riparian vegetation along streams in good condition at higher elevations are dominated by conifers and hardwoods. Douglas-fir is the most common conifer; other trees species present include juniper, aspen, alder and cottonwood. Many shrub species also are present, including but not limited to chokecherry, mock orange, various willow species, sumac, rocky mountain maple, red osier dogwood and elderberry.

At lower elevations, few or no tree species exist in riparian areas. Riparian areas in good condition at these elevations are dominated by willows and the shrubs described above, as well as vigorous sedge/rush communities and native grasses.

In many areas, disturbance such as road construction, timber harvest, grazing, trampling and/or natural flood events have caused downcutting in stream channels, bank erosion and loss of one or more native species in disturbed stream reaches. These disturbed reaches typically have been invaded by noxious weeds and/or less desirable annual species that do not provide high quality riparian habitat. Streams with disturbed riparian habitat and channel processes are found in all of the subwatersheds within the AA. Many disturbed stream segments are need of restoration in order to reestablish native riparian vegetation, control noxious weeds, restore stream channel processes and prevent further downcutting. In some areas, restoring channel processes and/or riparian habitat will require maintenance of roads and exclosures in RCAs adjacent to streams as well as control of grazing pressure.

Most of the high quality riparian and aquatic habitat in the AA is located in the headwaters of streams, where topographic conditions have precluded extensive disturbance.

3.6 Wildlife

3.6.1 General Habitat

The Lookout Mountain AA has a large diversity of habitats associated with many different species of wildlife. The major vegetation type in the AA is rangeland shrubs and forbs. These areas are used primarily as a winter range for mule deer, elk, and bighorn sheep, although many species of wildlife also use these areas for breeding and feeding. Forested lands in AA generally are located in upper elevations and surrounding the headwaters and upper drainages of the streams that originate from Lookout Mountain. These forested areas consist primarily of Douglas-fir communities with western larch and a variety and understory shrubs. Thomas et. al. lists approximately 125 wildlife species that use such communities primarily for breeding and feeding. The forested habitats in the Lookout Mountain area are Mesic Mixed Conifer forests. This habitat type is considered a priority habitat by the Partners in Flight Landbird Conservation Strategy because a substantial loss of the late-successional range of this habitat type already has occurred (Altman, 2000). Habitats of this type commonly are

harvested by regeneration prescriptions such as clearcuts or shelterwood cuts in order to reduce insect and disease occurrence and, thereby, the risk of catastrophic fire.

Bird species associated with late-successional Mesic Mixed Conifer forest have been adversely impacted by the loss and reduction of late-seral conditions and structural elements such as snags. Some of these species include varied thrush, olive-sided flycatcher, Townsend's warbler, golden-crowned kinglet, blue grouse and red-breasted nuthatch.

The desired condition in late-successional Mesic Mixed Conifer forest is a multi-layered old forest with diverse structural elements, e.g., snags, dense shrub patches, and high canopy closure, in patches across the landscape. Landbird conservation in late-successional Mesic Mixed Conifer forest emphasizes maintaining healthy ecosystems through representative focal species for five habitat conditions, i.e., large snags, overstory canopy closure, structurally diverse multi-layered forest, a dense shrub layer in forest openings or understory, and edges and openings created by wildland fire.

There are approximately 1175 acres of old and mature forests located in the AA. These areas serve as habitat for as many as 108 species of wildlife, primarily for breeding and feeding. Approximately 1752 acres of immature forests are located in the AA, and serve as breeding and feeding habitat to approximately 74 wildlife species.

There are approximately 827 acres of aspen communities in the AA many of which are associated with wet areas and streams. These special habitats are used by as many as 77 wildlife species mainly for breeding and feeding.

There are approximately 2154 acres of shrub/hardwood communities that were considered for treatment in the AA. These areas generally consist of mountain shrubs such as snowberry, chokecherry, and bittercherry, with varying degrees of conifers canopy cover. There are approximately 108 species of wildlife that use these communities for breeding and feeding. There also are approximately 11,800 acres of shrub communities throughout the BLM-administered lands in the AA and contiguous private lands, comprised primarily of sagebrush communities outside of the forested areas, on middle and lower slopes.

Western juniper communities also occur on approximately 1680 acres in the AA, and are used by about 78 species of wildlife for breeding and feeding. The remaining vegetation communities within the AA are characterized by grasses. There are approximately 1231 acres of grass communities located within Douglas-fir communities on BLM lands in the upper areas of Lookout Mountain. On the lower elevations of the AA, there are approximately 18,000 acres of perennial bunchgrasses, annual grasses and sagebrush/bitterbrush communities associated with upland vegetation common to this area on both BLM and private lands. The lower elevation areas are breeding and feeding habitat to approximately 75 wildlife species, but mainly a winter range for mule deer, elk, and bighorn sheep. Some of these areas that are dominated by annual grasses are being used for forage during the winter by deer and elk. Unfortunately, these vegetation species are low quality forage for ungulates, and high quality native bunchgrasses would be preferred.

There are approximately 109 miles of riparian habitat in the AA. This habitat is highly important to many species of wildlife, particularly because wildlife seek travel corridors, water and relief from high ambient temperatures, all of which is offered in riparian areas. Indeed, Thomas, et. al. lists approximately 135 wildlife species that use riparian areas for breeding and feeding. Most species of amphibians require riparian areas for every life history need and do not travel outside of these areas. Because water is a limited resource in the AA and surrounding lands, wildlife species are compelled to congregate in riparian areas for water and shade needs.

3.6.2 Big Game Wildlife

The Lookout Mountain area has been identified by the Oregon Department of Fish and Wildlife (ODFW) as a Big Game Management Unit (Unit). The ODFW has designated Management Objectives (MO) for the Unit and adjusts hunting permits to the area to reach those MOs. Currently, the MO for deer in the Unit is set at a ratio of 15 buck deer to 100 does. The latest population estimates for mule deer in the Unit is approximately 16 bucks/100 does. However, doe/fawn ratios indicate that the winter survival rate for fawns are low.

The current MO for elk in the Unit is designated at 300 animals. The latest population estimates indicate that 408 individuals exist in the Unit. The ODFW is concerned that the increasing elk population in the Unit will result in damage to private land. ODFW believes that due to a gradual increase in roading and activity on public lands, elk have had to seek the relative security and nearby alfalfa fields of private lands (personal communication, Keister, G., 2000) . It should be noted that the aforementioned population estimates do not account for large movements of elk between units or across the Snake River.

The ODFW currently is revising its mule deer and elk management plans. These revisions may change the MO numbers in the Lookout Unit. These changes may or may not affect activities analyzed under this DEIS.

There are approximately 1057 acres of forest in the AA that provide satisfactory thermal cover for wild ungulates. The canopy cover in these stands is no less than 70 percent. Further, there are approximately 1445 acres of forest in the AA that provide marginal thermal cover. These stands bear canopy cover between 40 and 70 percent. In short, the total acreage of thermal cover in the AA is approximately 2502 acres. An additional 343 acres of forested habitat in the area has sufficient canopy cover to be considered thermal cover for elk, although the stands are too small to offer effective big game cover and will not be included in cover calculations.

Hiding cover for elk and deer is defined as vegetation capable of hiding 90% of a standing adult elk or deer from the view of a human at a distance equal to or less than 200 feet. Because hiding cover is associated with big game hunting, and because hunters frequently locate big game from open roads, the hiding cover must be determined in relation to these roads. Therefore, vegetation capable of hiding 90% of an adult elk or deer at a distance equal to or less than 200 feet from the
edge of an open road would be considered hiding cover. There are approximately 1049 acres of hiding cover along open roads in the Lookout Mountain Area.

Analysis of habitat effectiveness (HE) for elk habitat in the project area using the model set forth in *Habitat Effectiveness Index for Elk on Blue Mountain Winter Ranges* (Thomas, 1988) indicates that the current habitat effectiveness index (HEI) is at 0.62. This value is considered moderate to high.

There currently exists a moderately sized band of California Bighorn Sheep occupying an area surrounding the Connor Creek sub-watershed in the AA. Population levels are unknown at this time, although the herd seems to be in good health and is reproducing. During field trips to the area in 1999, approximately 20 ewes and lambs were seen in the Connor Creek headwaters.

There have been many reports of cougars in the AA, and cougar tracks have been seen on a regular basis while traveling in the area during both winter and summer. Because cougars prey mainly on deer, cougar numbers will fluctuate over time as the number of deer in the area vacillates. As indicated above, ODFW believes that the deer population is stable or decreasing slightly, and hence it is expected that the cougar population likewise will stabilize or decrease.

3.6.3 Special Status Species

3.6.3.1 Bald Eagle

The bald eagle is listed as threatened under the Endangered Species Act. The Lookout Mountain AA falls under the guidance of the Pacific Bald Eagle Recovery Plan, which calls for providing "secure habitat for bald eagles in the 7-state Pacific recovery area and increas(ing) populations in specific geographic areas to levels where it is possible to delist the species." The AA is within 2 recovery areas - Blue Mountains and Snake River Canyon. Areas that contain important habitat for eagles have been identified as "key areas". There are 14 key areas in the Blue Mountain recovery area, and 7 key areas in the Snake River Canyon recovery area. The AA is within 1 key area in each of the recovery areas. There is only one target recovery territory for one of those key areas, along the Powder River. Because the Powder River is outside of the AA, however, the Recovery Plan does not require any future nesting pairs in the AA for the recovery of the species.

Other habitat protection tasks have been outlined that are specific to the key areas that are to be carried out by the Federal agencies. There are 4 tasks specific for the BLM in AA that are to be applied for eagle habitat protection:

1. Prohibit logging of known nest trees, perch trees, and winter roosts.
2. Preserve snags in eagle use areas.
3. Establish buffer zones around eagle nest sites.
4. Exclude logging, construction, habitat improvement, and other activities during critical periods of eagle use.

The majority of use of the AA by bald eagles occurs during the winter. As many as 15-20 bald eagles can be seen along the Snake River from Huntington to Swede's Landing. Eagles roost on the rock outcrops, cottonwoods, power poles and other trees and structures, and forage for fish, waterfowl, and carrion along the Snake River.

Because there are no plans to remove any of the trees or structures on BLM lands along the river during implementation of this plan, no effect on bald eagles is expected.

3.6.3.2 Northern Goshawk

The northern goshawk is a Bureau Sensitive species, and is managed so as not to contribute to the need to list the species under the federal Endangered Species Act. There currently exists at least one known northern goshawk nest within the AA, in the Sisley Creek sub-watershed. Approximately 480 acres surrounding the nest will be managed according to guidelines formulated to protect and enhance goshawk habitat in the area. The goshawk is a forest habitat generalist that uses a wide variety of forest ages, structural conditions, and successional stages. Special adaptations that give the goshawk the necessary maneuverability to hunt in forested areas include short, rounded wings and a long tail. The goshawk preys on large to medium-sized birds and mammals which it captures on the ground, in trees, or in the air. Requisite nesting habitat characteristics for goshawks include dense overhead foliage or a high degree of canopy cover created by tall trees. Most nests are located on north facing slopes in dense, mature, or old-growth conifer stands. Continued surveys to locate additional nest sites or alternative nest sites will be done according to established protocol each year in the life of this project.

3.6.3.3 Canadian Lynx

The Canadian lynx was listed as Threatened by the U.S. Fish and Wildlife Service (FWS) in March 2000. Primary Canadian lynx habitat in Oregon is characterized as subalpine fir habitat types where lodgepole pine is a major seral species, at a general elevation of 4100 -

6600 feet. Moist grand fir and moist Douglas-fir habitat types, where they are intermixed with subalpine fir habitat types, also provide lynx habitat. Historically, stand replacement fires have provided ideal snowshoe hare and lynx habitat, creating openings and structural diversity. Most lynx habitat is associated with relatively gentle slopes and nearby water sources. Because the forest habitat type on Lookout Mountain is primarily Douglas-fir above the 4100 foot elevation threshold, the area could be considered habitat for lynx. However, due to the isolation of the area, the overall steepness and the limited water sources in the AA, the habitat is considered marginal, and the potential for denning activity is minor. Indeed, recent habitat definitions and mapping exercises by the U.S. Forest Service (USFS) and the National Canadian Lynx Scientific Team have determined that the Lookout Mountain is not suitable habitat for the Canada lynx. The potential for a migrating or dispersing individual lynx to enter the AA also is minor. Under the proposed project, snowmobile surveys for lynx would continue each year, following the standards described in *American Marten, Fisher, Lynx, and Wolverine: Survey Methods for Their Detection* (Zielinski and Kucera, 1995).

3.6.3.4 Sage Grouse

The sage grouse, a BLM Bureau Sensitive species, generally has 3 different habitat types - habitat used during the nesting and early brood-rearing period, habitat used during the late brood-rearing period, and habitat used during the wintering period. Generally, they require sagebrush communities with degrees of cover variable with season of use.

Nesting and early brood-rearing habitat for sage grouse consists of sagebrush plants 16-32 inches tall with a canopy cover ranging from 15-25 percent and an herbaceous understory at least 7 inches tall with a grass canopy cover of at least 15 percent and a forb canopy cover of at least 10 percent. Optimal late brood-rearing habitat contains a mosaic of land types that includes at least 40 percent of the area in sagebrush stands that are 16-32 inches tall with a 10-20 percent canopy cover and an herbaceous understory with a grass canopy cover of at least 15 percent and a forb canopy cover of at least 10 percent. Wintering habitat is optimal in areas where sagebrush is exposed at least 10-12 inches above snow level. Ideally, exposed sagebrush with 10-30 percent canopy cover should be found on 80 percent of the wintering area.

It is unknown at this time precisely how much suitable sage grouse habitat exists in the AA. There are areas with the potential to be wintering habitat and late brood-rearing habitat, although it is unlikely that the area contains nesting and early brood-rearing habitat because the sagebrush communities comprising this habitat type usually are under snow during the time of nesting and early brood-rearing (April - June). In any case, more than 11,800 acres of sagebrush and potential perennial bunchgrass communities exist in the AA, and hence the likelihood of sage grouse occupying the area during a portion of their life history is high.

3.6.3.5 Columbian Sharp-tailed Grouse

The Columbian Sharp-tailed grouse was petitioned for listing under the Endangered Species Act, but listing was found by FWS to be unwarranted at this time (October 2000). Although no sharp-tailed grouse are known to exist in the AA, scattered habitat for this bird species is found there. During spring and summer, sagebrush and grasslands provide nesting and brood-rearing habitat, while mountain (upland shrub) and riparian shrubs are used for escape cover. Fall and winter habitats are comprised primarily of mountain shrub and riparian vegetation. Within these habitats, sharp-tails use only areas where annual precipitation totals at least 12 inches, and where the topography is flat to rolling (<30 % slope). Because slopes in the shrub and grasslands in the AA are relatively steep, because riparian habitat meeting this bird's habitat criteria is limited, and because little shrub and grassland exist on the gentler slopes at higher elevations, only limited acreage of isolated patches of habitat for the Columbian sharp-tailed grouse are found in the AA. A population of reintroduced sharp-tails is known to exist across the Snake River, approximately 15 miles north of Weiser, Idaho. It is expected, therefore, that individual birds could be located in portions of the AA from time to time.

3.6.3.6 Yellow-billed Cuckoo

The yellow-billed cuckoo has been determined to be warranted for listing by the FWS, although no official listing notice of this species has been forthcoming. This species was very common locally in Oregon and was thought to be nearly extirpated in the 1940s. There have been no confirmed sightings of this species in Oregon or in the Lookout Mountain AA in decades. Yellow-billed cuckoos are associated with relatively thick, closed-canopy riparian forests. These riparian forests typically are composed of various species of willows and cottonwoods, especially black cottonwoods along the rivers of eastern Oregon. Studies in California have suggested that patches of suitable habitat must be at least 37 acres in size and include over 7.5 acres of closed canopy riparian forest (Csuti, et. al. 1997). With relatively narrow riparian areas containing low densities of willows and cottonwoods, there are very few, if any, areas in the AA that meet all or even most of these habitat characteristics.

3.6.4 Other Wildlife Species

Other wildlife species that occur or potentially occur in the AA include blue grouse, turkey, woodpeckers, owls, and neotropical migratory bird species. Relatively little is known about the occurrence in the AA of many of these species. It is clear, however, that suitable habitat for many of these species exists, and, as such, it is assumed that these species do occur in the AA in numbers relative to the abundance of the habitat on which they depend.

3.7 Cultural Resources

Situated at the interface between Columbia Plateau and Great Basin cultural regions, Big Lookout Mountain is within an area traditionally used by several tribes including the Paiute, Nez Perce, Cayuse, Shoshone, Bannock and Umatilla. Although the geographic area is not specifically described in ratified treaties, Lookout Mountain is within the traditional subsistence range of the Indian groups who historically occupied reaches of the Snake River, Burnt River, and Powder River. Little is known about ethnographic use of the Lookout Mountain area. An account of Captain Bonneville's travel along the Snake River in 1834 relates that Snake Indians were encountered dwelling on the west bank of the Snake River upstream from the Powder River confluence. An account of Nez Perce groups and village locations indicates that the lower Powder River and Pine Creek were within the homeland of one Nez Perce band, while the vicinity near the mouth of the Burnt River was used by various tribes, including the Burns Paiute. According to early General Land Office survey notes, Indian hunting trails led from the lower Powder River south to Lookout mountain country.

Based upon archaeological evidence, use of the Lookout Mountain area probably dates as far back as 7000 years ago. Local historic accounts indicate that Paiute people were present in the Sisley Creek area as recently as the late 1870s. Archaeological surveys conducted before the construction of dams on the Snake River refer to villages, rockshelters and rock art along the west shore. Among the traditional subsistence resources that could have been procured on Lookout Mountain were elk, deer, bighorn sheep and upland game birds, roots such as biscuitroot and bitterroot, and chokecherry and serviceberry. Most Native American archaeological sites currently identified on Lookout Mountain are upland hunting and root gathering camps.

Historic settlement of the lower slopes of the mountain began in the late 1860s along the Snake River and along the route of the Oregon Trail on the Burnt River. By the 1880s, wagon roads had been established on Sisley Creek, from Jordan Creek to Morgan Creek and thence to the Snake River. A road from Connor Creek ascended the east slope to Pole Creek. After the railroad was completed to Huntington in 1884, a wagon road was established from Huntington north along the Snake River. By 1909 a railroad had been built along the Snake River from Huntington to Robinette, at the mouth of the Powder River. With the advent of

improved transportation, mines, ranches and fruit orchards were thriving enterprises in small communities on the Snake River, until the inundation of the river by Brownlee Reservoir.

Homesteading accelerated in the 1880s, and by the turn of the century several homesteads were scattered on the middle and upper slopes of Lookout Mountain. The 1882 General Land Office survey described areas of mountain vegetation as aspen, juniper and fir, with dense thickets of "mountain laurel," serviceberry, alder and wild cherry. Mountain laurel probably refers to Ceanothus velutinus, also known as sticky laurel, mountain balm or buckbrush. From the 1890s into the first decades of the 20th century, thousands of sheep owned by local ranchers grazed the summer range on Lookout Mountain, with some bands brought in from Morrow County, Oregon and from nearby Idaho. In the early 1900s, cattle began to dominate the livestock industry of Baker County. Cattle were grazed from home ranches in the Durkee Valley, Snake River and Lower Powder River along Daly Creek. Between 1917 and 1930, stockraising homestead entries were filed on Lookout Mountain, but few were patented on the east slope. Historic records also show that a sawmill was operated in the 1880s on the east slope of Lookout Mountain at Sawmill Basin above Connor Creek, and recent cultural resource inventories identified a historic sawmill on Hibbard Creek.

Placer and lode gold mining commenced in the 1860s, in concert with the gold rush to the Blue Mountains. On the east slope of Lookout Mountain, a quartz mill was installed on Connor Creek, and a mining town with a post office and hotel was established. In 1883, the JP Faull Quartz and Placer Mines on Connor Creek were patented. Connor Creek mines were notable among the gold mines along the Snake River, and evidence of historic gold mining on Lookout Mountain is found primarily on Sisley Creek and Connor Creek.

Cultural resource inventories were conducted on BLM-administered land in summer 1999 and 2000 and fall 2001. Previously, a small area inventory in 1979 for the Big Lookout Mountain Timber sale resulted in a record for one historic mining ditch. The more recent cultural inventories identified 71 heritage resource locations, consisting of 43 Euro or Native American sites and 28 isolated artifacts or small artifact clusters. Isolated artifacts, where there is no potential for subsurface cultural deposits, are not considered eligible for the National Register. Euro-American historic site types include collapsed homestead cabins with associated features and artifacts, corrals, numerous scribed aspen trees, wagon roads, a sheep camp, stacked rock cairns, gold mining structures and features (e.g., ditches, tailings, roads), and a sawmill site. Native American archaeological site types on Lookout Mountain are primarily small lithic scatters (generally 2 acres or less in size) which probably represent hunting and root gathering camps, one rockshelter and a few rock cairns. No rock art or toolstone procurement sites were identified on BLM land. Although formal evaluations have not been completed, the Native American archaeological sites and the Euro-American historic sites including homesteads, sawmill, mining sites and wagon roads are considered potentially eligible for the National Register of Historic Places.

Fifty percent of the Euro-American historic sites are in riparian zones (e.g., springs, meadows, stream terraces) and approximately 75 % of Native American archaeological sites are in riparian settings. The steeply dissected, rugged topography of Lookout Mountain offers limited settings conducive to human occupation. Generally, areas with potential for historic use include ridges, prominent places and high elevations, mineralized localities, areas rich in plant food resources, and gentle slopes within 1/8 mile of water sources. Among the factors that have impacted these sites in the past are old road construction and use, livestock congregation, development of upland springs for stock watering during the period encompassing the 1950s to 1970s, off-road vehicle traffic at recreational camp sites, recent carving of aspen trees, fence deterioration, illegal excavation and removal of artifacts, unauthorized developments by private parties, wildfire, and natural erosion and soil deposition. To varying degrees, some of these factors are ongoing.

Project scoping letters and invitations to tour the Lookout Mountain project area were sent to six Tribal governments (refer to Tribal governments listed in Appendix 3). To date, none of

the Tribes has identified any sacred sites or traditional cultural properties in the project area. The Burns Paiute Tribe requested a tour of Lookout Mountain, and a tour was conducted with Tribal representatives. Among the interests preliminarily identified by Burns Paiute representatives were protection of cultural resource sites and enhancement of traditional food resource gathering by increasing the incidence of chokecherry and generally improving the health of shrub communities. This issue is addressed by alternatives and actions that enhance the mountain shrub community type. Another matter of tribal concern is water quality and fisheries in the Snake, Powder and Burnt River sub-basins. This matter is addressed by alternatives and actions designed to improve stream and riparian health in the small portion of the sub-basins that lay within the AA.

It is anticipated that another BLM-led tribal tour of the project area will be conducted in spring or summer 2002. Any additional tribal concerns that are brought to the BLM's attention either during the course of the future tour or at any other point during the project planning and environmental analysis process will be addressed in the Final Environmental Impact Statement (FEIS).

3.8 Recreation

Because of Lookout Mountain's unique character, its visual prominence, and its central location between Baker City and Ontario, the area is known for its quality hunting and backcountry recreation opportunities. These opportunities are facilitated by a combination of geologic formations, numerous springs and meadows, abundant wildlife, unique plant communities, and a low-intensity pattern of land and recreation use.

The Lookout Mountain planning area is a designated Extensive Recreation Management Area (ERMA). ERMAs are BLM administrative units where recreation management is only one of several management objectives and where limited commitment of resources is required to provide extensive and unstructured recreation activities. The Lookout Mountain ERMA was designated for hunting and sightseeing in a primitive setting.

Primary access to the project area is via Interstate 84, while roads in the immediate area are unsurfaced and challenging. The main Lookout Mountain Road is accessed via the Manning Creek and Morgan Creek drainages, which are served by narrow and winding roads. The Snake River/Mormon Basin Back Country Byway, which parallels Brownlee Reservoir, also provides access to the project area via Morgan Creek, Hibbard Creek and Conner Creek Roads. These roads are popular backcountry drives for sightseeing, hunting and driving for pleasure.

Recreation pursuits occurring in the project area include camping, big and small game and upland game bird hunting, Off Highway Vehicle (OHV) riding, fishing, sightseeing, wildlife viewing, horseback riding, and driving for pleasure. Recreational use is heaviest in the summer and fall, although use is yearlong. Snowmobiling is the primary winter activity. Soda Lake is located near the Snake River Mine area and provides limited recreational opportunities due to its small size and remote access. The heaviest recreation use occurs along the Lookout Mountain Road and the Snake River Road. No maintained trails exist within the project area. Commercial use of the area is low, consisting of one to three outfitters and guides who request permits annually.

Brownlee Reservoir of the Snake River borders the east side of the project area. Spectacular, panoramic views of the Snake River canyons to the east and the Wallowa Mountains to the north are available to those who drive to the top of 7120 foot Lookout Mountain. There is a fire lookout tower at the summit, which is staffed from approximately July 4 to Labor Day each year. The road to the summit and lookout tower is gated and locked except during this 45-day period, and then only during customary work hours. The summit offers outstanding mountain, valley, and high desert views in all directions. Many other observation points offer sweeping views of green valleys, expanses of high desert, steep canyons and rolling hills.

The eastern portion of the project area includes BLM recreation sites along Brownlee Reservoir. Swedes Landing is one such site, located at Quicksand Creek where the Snake River Road first meets the reservoir coming down from the Richland Overlook. The site is used for boat launching, camping, and fishing, and has two vault toilets and ill-defined parking and camping spaces. It is the sixth most heavily used dispersed site out of 139 sites along the Hells Canyon Complex reservoirs. Another popular dispersed recreation site adjacent to the reservoir is located at the mouth of Conner Creek.

Numerous upland dispersed recreation sites and hunting camps have been established by users. Based upon casual observation, it appears that some of these sites are very important to these users, who return faithfully each year. The sites offer amenities such as easy access, tree canopy, springs, and levelness, and therefore attract repeat use. The sites can be improved by providing views, privacy, grass, and reducing the outward appearance of livestock use. A complete inventory and mapping of the sites has not been done, nor have they been monitored for use and condition. Most are located adjacent to roads and lack definition, causing use to spread out. The lack of site definition has resulted in an increase in erosion and sediment delivery to streams.

There is one developed campground within the project area, located near the summit of Lookout Mountain above 6000 feet. This site, Bassar Diggins, is small and minimally improved, with several camping sites, a double vault toilet, a buck and pole fence enclosure, and a spring-fed livestock watering trough. Use often is associated with hunting activities, and snow levels seasonally limit accessibility. The site receives minimal maintenance and is deteriorating. The site is underlain by a fine soil that powders easily and causes excessive dust problems. Vegetation within the site is in extremely poor condition. Trampling from previous grazing of the area and vehicle damage incurred over many years has taken its toll on trees, shrubs, and grasses. As a result, some gully erosion has occurred. The meadow next to the developed area also has been abused, with large ruts from vehicles present. The vault toilets are located just down hill from a spring, causing occasional flooding within the vaults.

Hunting is the most popular recreation activity throughout the project area, which lies primarily within the Lookout Mountain Big Game Management Unit, as designated by the Oregon Department of Fish and Wildlife (ODFW). Since 1995, 300-450 bull and cow elk tags have been issued annually for rifle hunting in the Unit, and the success rate for all three elk hunts is lofty, averaging about 30%. Deer hunting is even more phenomenal, with about a 70% success rate for rifle bucks. Since 1995, 229-491 rifle buck tags and 130 archery tags have been issued annually. Hunting for blue grouse, chukar, bear, and cougar also is significant. In 1996, ODFW estimated that Baker County receives 78,550 annual hunter days for all species. A significant portion of these hunter days occur in the Lookout Unit. Studies have shown that the average hunter spends $14.49 daily on miscellaneous supplies, meaning that hunters provide the local economy with approximately $1,138,000.00 annually, much of which can be attributed to Lookout Mountain hunters.

Hunting access is affected by the fact that 70% of the land within the Lookout Unit is privately owned. ODFW is concerned that access to private land is becoming more restricted. Assuming hunting numbers will remain constant, we can expect pressure on public lands to increase.

OHV use and resultant impacts on public lands has increased substantially in recent years. The Baker Resource Area RMP (1989) designates 4302 acres in the Lookout Mountain/Soda Lake area as open to OHV use and limits such use on 19,200 acres to existing roads and trails. Approximately 3760 acres in the northeast corner of the AA will retain an “open” designation, while the majority of the AA (21,400 acres) will retain its “limited” designation. Although the RMP also identifies maintaining OHV designations in the area as a resource condition objective, these designations have become somewhat meaningless since the adoption of the RMP. “Existing roads and trails” were not mapped or defined, and it takes very few passes over the fragile soils of Lookout Mountain to create a new pathway that appears to be

"existing" to following users. At this time, the impacts of OHVs are minimal, but the potential for increasing impacts is great. Another management action objective set forth in the RMP is to identify designated roads/trails through maps and signs and to install OHV signs. No change is proposed to this directive and no additional signing will result from this proposed project.

For nature study, Lookout Mountain offers a wide variety of plant communities. These plant communities include moist habitats with extensive stands of aspen associated with a wide variety of herbaceous plants. Drier upland sites include large diameter Douglas-fir and western larch in association with snowberry, serviceberry, and creeping Oregon grape.

A BLM-owned cabin is located near the upper part of Sisley Creek. The cabin is open for public recreation use and has been minimally maintained by private volunteers. There is no reservation system governing public use of the cabin. Rough four-wheel-drive roads limit access.

Some degree of risk to visitors is inherent in semi-primitive recreation settings. The most prevalent hazards are getting stuck on rough, undeveloped roads and becoming trapped by inclement weather without adequate gear.

The planning area contains no wilderness, Wilderness Study Areas (WSAs), Areas of Critical Environmental Concern (ACECs), Wild and Scenic Rivers, or other special recreation designations. However, it should be noted that the RMP ROD (1989) stated that Big Lookout Mountain aspen sites were to be evaluated for ACEC designation. Indeed, the unusual nature of the disjunct aspen/Douglas-fir association on Lookout Mountain may merit ACEC designation, and that possibility will be addressed during the course of the imminent Baker RMP revision, which is slated to commence in 2003. In the meantime, all action alternatives considered herein have been designed to protect and enhance aspen in the project area in such a manner that suitability for future ACEC designation will not be affected.

The Baker RMP identifies two resource condition objectives for the Lookout Mountain GU, to wit, to maintain scenic quality and to enhance recreation opportunities for hunting, sightseeing and hiking. The proposed project's design and its forest health goals are consistent with enhancing these recreation opportunities while limiting undesirable recreation impacts. As recreation demand increases in the coming years, it will be important to be able to offer a wide range of recreation alternatives.

Lookout Mountain generally is characterized as a semi-primitive motorized setting, while some acres are classified as roaded natural. The GU, in its entirety, is a predominantly unmodified natural environment of moderate to large size. According to the Oregon State Comprehensive Outdoor Recreation Plan (1991), the demand for backcountry, semi-primitive recreation settings is twice the supply. Conversely, the supply of roaded natural and roaded modified settings exceed demand.

The Baker RMP (ROD, 1989) proposed developing identified trail systems in the Lookout Mountain area. The proposed project will not address this issue to anticipated funding constraints and the existence of other area recreation priorities. The RMP also called for site planning and development for Bassar Diggins. That proposal will be addressed in this plan.

3.9 Visual Resources

The visual impact of proposed activities as seen from interior and exterior roadways is a major consideration. In addition to the exterior highways, there are two primary routes, Lookout Mountain road and Morgan Creek road, which provide means for people to explore and recreate in the area.

Lookout Mountain itself is a predominant feature on the landscape. It stands as an isolated conical shaped mountain that rises above the surrounding terrain. From a distance, it appears as a bald mountain that reaches above timberline, with its flanks coated by an uninterrupted pattern of dark green timber. It is a unique feature within an otherwise semi-desert terrain. It is visible for many miles along I-84 from a point east of Ontario, while still in Idaho, to a point north of Baker City, Oregon; and from Hwy. 86, south and east of Richland and Halfway. Interstate 84 is considered a sensitivity Level I travel route. Highway 86 is a State Scenic Byway designated by both the BLM and USFS. The mountain is viewed by thousands of traveling public, daily and year-round. The background view of Lookout Mountain may be more significant than the interior views.

The existing visual condition on public lands primarily is natural in appearance. Within the GU there are many acres of private land which vary from a lightly altered to a heavily modified landscape. Most of the views from interior access roads provide open vistas across drainages with extensive background views, or down one drainage with a single focal point.

Visitors traveling along the Lookout Mountain road currently observe a moderate to high degree of landscape variety. The primary tree cover is Douglas-fir, juniper, and aspen with scattered western larch. Primary water features are the multitudes of springs, Morgan Creek, Hibbard Creek, Fox Creek, Connor Creek, Manning Creek, Soda Lake, and the Snake River. The topography and climate create conditions suitable for extensive aspen groves which provide visual variety in hue and texture. Historically, the area was believed to have been a "sea" of aspen. The creeks drain the highly dissected landscape that provides the canyon type vistas with converging lines. They also create riparian zones that provide visual diversity in color. The water within the creeks is seldom seen due to the presence of heavy riparian vegetation. Shrubs, hardwoods, and open grasslands also contribute to the visual resource, providing color variations during spring flowering periods, fall, and early spring green up, and variations in form and texture. Wildflowers also are an important component in the visual resource.

Many stands within the GU are afflicted with dwarf mistletoe, which primarily affects Douglas-fir, causing deformed branches, suppressed growth, and eventually large "witch brooms." The results of this disease are deformity, mortality, and infection of virtually all regeneration. Trees that should become tall and grand instead will become stunted and misshapen. Although these impacts are not visible from a distance, they are apparent from the Lookout Mountain Road and other roads within the area. Because these impacts are relatively small in scale, visually they are considered natural-appearing and part of the natural process.

Another negative existing impact on the visual resource is grazing. In isolated areas, riparian vegetation has been grazed off by cattle and wildlife to the point where very little vegetation remains, thus degrading the "pristine" visual condition.

Mitigation measures aimed at protecting visual resources may increase project costs. Further, tourist and recreation-related income in the general area may decline if impacts on the visual resource are so extreme as to reduce recreator and tourist visitation.

Pursuant to current Visual Resource Management (VRM) guidelines, the casual observer may be able to see that some management activity has occurred in area categorized as Class II, but the activity should remain subordinate to the characteristic landscape. Within the Class III areas, management activities may attract the attention of the casual observer but it should not dominate their view. The existing character of the landscape will be partially retained. Within Class IV areas, the level of change may be high. However, every attempt will be made to minimize the impact of activities through careful location, minimal disturbance, and repeating basic visual elements. Under the Baker RMP (1989), the entire Lookout Mountain GU was categorized as Class II. Technological advances and supplemental field work in more recent years has revealed that much of the GU actually belongs in Class III and IV.

The Resource Area-wide goal is to manage the visual resource for the greatest quality attainable, commensurate with other appropriate public uses, costs, and benefits. The visual resources of the viewshed (specific viewing area) will be maintained through the adopted management classes that were developed for the GU pursuant to the planning process for the Baker Resource Area. Visual Resource Inventory Classes are based on three factors: 1) scenic quality, 2) sensitivity level, and 3) distance zones. Inventory classes are informational in nature and provide the basis for considering visual values in the RMP process. Assignment of visual management classes is ultimately based on the management decision made in the RMP.

Proposed critical components of the visual resource in the AA are: Class II zones along the Snake River, along Lookout Mountain Road throughout forested areas, and the Bassar Diggins recreation site; the Class III zone beyond the seen area above the Snake River Road; and, the Class IV zone comprised predominantly of grassland/sage shrublands and middle and background distance zones from primary viewing areas (KOPs). Each action alternative proposes the siting of treatment units within Class II zones. Unit design, silvicultural treatments and fuels prescriptions can be designed to mitigate impacts to the visual resource in the short term and to enhance long-term vegetative health and stand structure.

Extensive aspen stand being overtaken by Douglas-fir

4.0 Environmental Consequences

4.1 Introduction

All natural resources management has environmental consequences, whether that management entails actual action or not. This chapter sets forth the foreseeable environmental impacts that may result from the implementation of any of the alternatives described in Chapter 2, including the No Action Alternative. The discussion of impacts is focused upon the key issues, resources, uses and management actions described in the preceding Affected Environment chapter.

This discussion addresses direct, indirect and, where known, cumulative impacts of the alternatives on each resource, use or management action. Cumulative impacts are the combined incremental effects of the proposed activities and other past, present and reasonably foreseeable future human activities and natural events within and outside of the project area.

4.2 Analysis Assumptions and Guidelines

The following assumptions and guidelines were used to direct the analysis of environmental consequences:

- The chosen alternative would be implemented as described in Chapter 2. Implementation would include Management Direction Common to All Action Alternatives, unless the No Action Alternative is selected;
- The Bureau of Land Management would have sufficient funding and personnel to implement the chosen alternative;
- Current trends in use would continue;

- Short-term impacts would occur during the first five years of plan implementation; long-term impacts would occur beyond five years;
- The necessary mitigation measures described in this chapter would be funded and implemented;
- The necessary monitoring would be funded and implemented; and
- All management direction set forth in the Baker Resource Area Resource Management Plan (RMP)(ROD 1989) would be followed.

4.3 Effects of the No Action Alternative

4.3.1 Forests and Woodlands

In the short term, current site conditions generally would persist in individual vegetation communities. Within 5-10 years, ongoing site degradation would become more noticeable. Aspen stands would suffer increased mortality within the older clones, with little or no recruitment. Douglas-fir and juniper would continue to overtop and crowd out smaller aspen clones, contributing to the degradation of these clones. Mountain shrub communities also would decline with increasing Douglas-fir and juniper encroachment, and would be less able to provide wildlife forage. On the other hand, encroachment on both aspen and mountain shrub communities would be countered by the decline of mistletoe-infected Douglas-fir stands and the eventual reestablishment of aspen and mountain shrubs. Further, with the implementation of rangeland S&Gs over the next several years, browsing of aspen sprouts will be monitored and livestock use adjusted to ensure that aspen regeneration is protected. Overall, the number of acres of aspen habitat type and mountain shrub habitat type would likely decline over the long-term and be replaced by Douglas-fir and juniper associations. Sagebrush would continue to dominate many rangeland sites but show signs of decadence and mortality as mature brush reaches its general life expectancy of 50-75 years.

Existing stand structure in immature, mature and old forest Douglas-fir stands would remain the same in the short term. As mistletoe infestation levels climb, older Douglas-fir in mature and old forest Douglas-fir stands would bear steadily increasing stress from mistletoe and bark beetle. In stands that currently bear high levels of infection, large tree mortality would increase; approximately 60% of the trees greater than 16" dbh would die over the next 50 years (Schmitt, 1999). Stand density would decrease as a result of heavy mortality, but over time young trees would repopulate the stands, and also would become infected by mistletoe. Again, mortality would result. As a corollary result of persistent mortality, fuel loadings would increase dramatically over time, and entire stands, including healthy young trees, would be prone to stand replacement wildfire. Suppression efforts, considering these fuel loadings and types, would be drastically more rigorous, and the likelihood of containing a wildfire at just a few acres would be poor.

As immature stands increase in density, they also would become more vulnerable to bark beetle attack, heavy mortality, and, consequently, stand replacement fire.

Similarly, as other vegetation communities continue to decline in health, their fuel loadings and susceptibility to wildfire would increase. In light of the large and increasing fuel loadings on these sites, any wildfire would be expected to be of high intensity, which could reduce long-term site potential and result in significant watershed degradation. It is a near certainty that, absent forest health treatment, the GU eventually would burn, particularly considering the fact that the area is prone to drought and to dry lightning storms.

In woodland and rangeland juniper sites, juniper density would continue to increase without any treatment. Eventually, the tree canopy would close and the understory vegetation would die out. As the crown cover of juniper increases, grasses, shrub cover, and wildlife populations would be reduced. Loss of understory vegetation would result in decreased infiltration, increased surface runoff, greater surface erosion, and increased water temperature

(Gedney, 1999). This also would reduce the diversity of wildlife habitat and forage production. Juniper density would not change on sites with juniper growing on limestone bedrock.

Over the next 50-75 years, and assuming a moderate probability of wildfire occurrence, many sites would be converted to new community types. Even without a significant fire, many aspen stands and mountain shrub communities would maintain some remnant component of their plant associations, but eventually would be dominated by Douglas-fir and/or juniper. Juniper encroachment into and domination of rangeland sites also would continue, excluding ground cover, baring soil, and thereby resulting in increased soil erosion. This, in turn, would reduce the diversity of wildlife habitat and hamper forage production. Also over the long term, mature stands containing trees between 120-150 years old slowly will acquire old forest characteristics. This phenomenon, combined with continual mortality and regeneration in current old forests, would result in a change in the location of old forest stands over time. Significant wildfire would interrupt these trends, and would result in the wholesale change of habitat types in the AA.

Without the burn projects proposed under the action alternatives, and considering the continually declining health of vegetation communities, fuel loadings would increase to the extent not only that wildfire would become more likely, but also that any such fire would be of such intensity as to diminish long term site potential and result in significant watershed degradation.

4.3.2 General Fire Effects

The No-Action Alternative would present no smoke impacts related to prescribed burning. However, this alternative would result in continued dramatic susceptibility to stand replacement fire. In the event of such a fire, smoke impacts would result which, unlike under prescribed burning, would not be subject to control and mitigation.

4.3.3 Watersheds and Fisheries

Implementation of Rangeland Standards and Guides will set specific grazing and utilization level objectives in riparian areas, thereby helping to restore riparian areas over time. However, because forest health treatments would not be performed, diseased trees would continue to infect other trees and stands. As a result, cover, stability and shade would decline in upper watershed stands, creating additional down-cutting and loss of spring and wetland habitat in those stands. In the event of a catastrophic wildfire, riparian areas and fisheries would be affected by increased erosion and sedimentation, the loss of bank-stabilizing vegetation and resultant downcutting.

4.3.3.1 Fish Habitat

Limited LWD placement would occur naturally as dead trees fall into the streams. Streambanks and shade would improve slowly over time as grazing utilization standards are met. Sediment from downcut streams would continue for an indefinite period of time until large wood is established in the system or areas are stabilized by vegetation recovery. Production of sediment to the Burnt River, Powder River, and Snake River would continue from existing streams with bare soil streambanks and continual down-cutting. Down-cutting caused by the erosive nature of rapid water flow and high water levels during natural storm events would continue until stream health has been restored. The loss of shade would continue as aspen clones die off.

4.3.3.2 Riparian Areas

Riparian areas would improve slowly as Rangeland Standards and Guides were implemented. Some riparian areas would continue to lose their ability to utilize their floodplains and

wetland habitat as streams continue to down-cut, resulting in the lowering of water tables and the failure of stream recharge. Bare soil streambank erosion and channel widening would continue in places, resulting in the loss of riparian habitat.

4.3.3.3 Water Quality

Water quality currently is not maintained. The streams in the analysis area contribute sediment to the Burnt, Powder, and Snake Rivers. It is expected that streams would continue to down-cut and contribute sediment. With no proposed restoration or emphasis to restore RCAs, many stream systems would continue to be unstable.

4.3.3.4 Roads

Roads currently delivering sediment to fish bearing streams would remain open. These roads would continue to impact water quality, fish habitat, and riparian areas.

4.3.3.5 Cumulative Effects

The current condition in the sub-watersheds in the AA is below potential for water quality, water tables, riparian areas and fish habitat. BLM-managed lands in the area are characterized by down-cutting and eroding of streams, nonfunctional water tables, and loss of riparian habitat. The No Action Alternative will result in the continuation of these problems. The streams in the AA will continue to contribute warm water and sediment to private land downstream, decreasing water quality there. It may be very hard for private landowners downstream from BLM-administered land to restore riparian and stream habitat on their land absent an effort on public land to stabilize streams and riparian areas.

4.3.4 Wildlife

The No Action Alternative would produce no direct effects to wildlife in the AA. Wildlife habitat would continue to develop in the manner in which it has done so to date. Currently, the threat of catastrophic wildfire within the Lookout Mountain area is high. Given the amount and severity of mistletoe in the forest canopy, many trees eventually would die and become snags, thereby increasing certain habitat components for cavity excavator species. However, other habitat components, including live trees, would decrease, reducing habitat for other wildlife species including dense forest dwelling species, e.g., the northern goshawk.

In the event of a catastrophic wildfire, habitat loss for many wildlife species would be great. A stand replacement fire throughout the forested habitat in the AA would result in the loss of approximately 6000 acres of such habitat, reducing the amount of live canopy cover to near 0%, eliminating most of the satisfactory and marginal cover of deer and elk, and destroying many nesting areas for birds. Northern goshawks would vacate the area in search of dense forests with high canopy cover. Many neotropical migratory bird species also would avoid the AA. Most importantly, recovery from such an event would be lengthy. Hiding cover for elk and deer would reestablish within 10-20 years, while it would take 30-50 years for trees to grow large enough to support nesting bird species and provide cover for deer and elk. Shrub and grassland habitats would recover much more quickly. Native grasses would begin to return to the areas within one growing season of the catastrophic fire. Shrubs also would reestablish quickly, although they would not be large enough to provide adequate cover for some wildlife species for as many as 10-15 years. This may result in the invasion of the area by non-native or noxious plants which, because of the substantiality of their occurrence both outside and within the AA, are likely to outcompete native species. If indeed these invasive and noxious plants become well established, many species of wildlife likely would avoid the AA.

Under the No Action Alternative, road densities in the AA would remain unchanged. Roads in the AA would remain open, and maintenance of these roads would continue as needed, within

budgetary constraints. Road-associated impacts on wildlife species, especially big game, would continue. Access to the area for hunting and other recreational purposes would continue.

4.3.5 Cultural Resources

Under the No Action Alternative, most previously observed impacts affecting cultural resources (described in chapter 3.7) would continue, with the potential for adverse effects resulting from the loss of cultural resource information. However, implementation of Rangeland Standards and Guidelines for the Lookout Mountain vicinity under this alternative would enhance preservation of cultural values by reducing or eliminating livestock pressure on cultural resource sites in riparian settings.

In areas at risk of wildfire, involving large fuel loads, long-duration burns and large total heat release, fire starts would pose hazards to cultural resources such as historic structures.

4.3.6 Recreation

Under this alternative, RMP management objectives for the recreation resource would be met. However, as no treatments would manipulate forest stands, the potential for insect and disease impacts and the consequent severe fire risk would remain high. Insects, disease, and fire can create large scale negative impacts on the recreation resource by creating hundreds of contiguous acres of dead vegetation, causing a change in wildlife populations, negatively impacting waterways, and rendering camp sites undesirable. If a catastrophic event does not occur as a result of inaction, some minor impacts to recreation still would be expected. Mistletoe infestation and resultant tree mortality would increase the number of hazard trees in the AA. Encroachment on aspen stands by Douglas-fir trees would reduce the aspen clone component and thereby diminish the recreation experience of viewing fall color. Existing roads in riparian areas would continue to degrade streams, impacting water sources and water-dependent wildlife and plants. Bassar Diggins would remain as is. Roads would remain in their present condition. In general, no major changes to recreation resources would be expected barring the occurrence of a catastrophic event.

4.3.7 Visual Resources

Under the No Action Alternative, VRM Class structure would not change. The entire GU would remain Class II, despite the fact that conditions on the ground do not warrant this classification in many areas. RMP management objectives for visual resources would be met. However, because encroachment of Douglas-fir into aspen stands and juniper into shrublands, excessive fuel load accumulation and, to an extent, grazing impacts would continue, the potential for negative visual impacts in the future is present. Further, continued failure to address forest health would result in the perpetually increasing risk of insect and disease impacts and/or major fire effects. Minor visual modifications would be expected in several areas throughout the Unit where tree mortality of limited scope would follow mistletoe infection. Stands so impacted may be noticeable only insofar as they develop uneven lines and a mosaic pattern.

Of course, large scale negative visual impacts are a potential result of insect and disease infestation and fire. These impacts may take the form of hundreds of contiguous acres of gray vegetation created by defoliators or woodborers or black/red then gray vegetation as a result of stand replacement fires. Fire scars are usually more natural appearing in the long-term than are conventional logging activities.

In short, under this alternative, no major changes to scenery or visual quality would be expected in the short term. In the long term, major changes to the visual resource due to the loss of diverse vegetative communities would be expected.

4.4 Effects Common to All Action Alternatives

4.4.1 General Fire Effects

The proposed decommissioning of existing roads would increase the fire suppression response time in some instances, thereby increasing the risk of a major fire start. Fire suppression tactics would shift from ground response to aerial response, i.e., smokejumpers and aerial retardant application.

Air quality effects resulting from prescribed burning would be common to all action alternatives, but would vary according the amount of acreage to be burned under each alternative. Alternative 3 would entail the most acreage of prescribed burning off all alternatives, and therefore presents the largest potential for smoke-related impacts. Conversely, Alternative 4 proposes the least prescribed burning, and bears the smallest potential for such impacts. Further, it is expected that the greatest smoke-related impacts (PM10 and PM2.5 emissions) would come from the burning of heavier fuel-loaded Douglas-fir stands. Impacts from the burning of rangeland sites would be expected to be less severe because of the lighter fuel loadings and shorter smoldering periods in these areas. Smoke may impact communities in lower elevation valleys, especially during atmospheric inversion periods. On the other hand, due to distance and typical wind direction (westerly), smoke impacts to Class 1 airshed and heavily populated areas likely would be minimal or nonexistent, as smoke plume trajectories during spring and fall burning windows would be expected to drift to the east and away from these areas. Burning under proper wind directions and atmospheric mixing may mitigate smoke impacts to Class I airsheds, non-attainment areas and local communities.

4.4.2 Watersheds and Fisheries

As discussed in §3.5.3 of this document, the BLM will continue to implement the 303(d) protocol for waters included in Oregon's 303(d) list of water quality limited streams. That protocol entails the development of WQRPs that will set forth protective and restorative measures designed to achieve and ensure compliance with state water quality standards (USFS/BLM, 1999). The BLM has conducted field surveys, PFC surveys and Standards and Guidelines assessments for rangeland health, all of which identify specific areas in need of riparian restoration and recommendations for completing this restoration. Said restoration not only will enable the BLM to comply with state water quality standards, but also to restore treated areas to their site potential. This is consistent with the State of Oregon's antidegradation policy, that is intended to protect water from unnecessary degradation from point and non-point pollution sources and to protect, maintain or enhance water quality so as to safeguard all existing beneficial uses.

As stated herein, there are no 303(d) listed streams within the AA, although streams within the AA flow into three listed streams (see Table 12). In relation to these listed streams, the only listing parameter that the proposed activities may affect is stream temperature. Other parameters for which the Burnt, Powder and Snake Rivers are listed are flow modification, toxics, bacteria and dissolved oxygen, although not all of these rivers are listed for each parameter. No proposed activities in the AA would affect the flow modification parameter for which the Burnt and Powder Rivers are listed. The BLM has planned no water diversions, ponds or off-channel watering projects, any of which would further degrade the other water quality parameters for which the downstream rivers are listed. Similarly, no proposed activities would cause any further degradation with regard to the other water quality parameters for which the downstream rivers are listed. As for the possibility of proposed restoration activities affecting stream temperature and/or sediment, rigorous monitoring of these activities would ensure that the project is not contributing to the need to list streams under 303(d) (see § 4.14.1.2 for descriptions of planned monitoring measures).

All action alternatives involve LWD placement into streams, in conjunction with riparian planting. This placement would help prevent future downcutting of the stream channel, capture sediment that currently is being transported downstream, reduce stream velocities and the erosive effects of water, increase pool habitat, and facilitate more water storage, which will help restore the water table near streams. Riparian plantings would help stabilize streambanks where native vegetation has been removed or altered, and along with other treatments, would increase shade to streams. Increased shade would ensure that tributaries in the AA that drain into 303(d) listed streams would not increase stream temperatures above current levels, and ultimately may reduce stream temperature in the restored tributaries.

All action alternatives also entail road decommissioning, that would reduce the number of road/stream crossings in the AA, reduce road density in RCAs, help restore stream channels to their natural sinuosity and gradient, and improve riparian and aquatic habitat.

Burning, noxious weed treatments, and seeding would help prevent slope failure and sediment delivery into the streams, and eventually would lead to the restoration of native vegetation in the AA. Burning will be done outside of the immediate floodplain. Seeding will be done in the fall following the spring burns in order to create ground cover in the first year and minimize sediment delivery into the streams. Placement of LWD prior to burning will help restore streams by rebuilding existing downcut streams and riparian areas and by promoting pooling.

While all of the treatments described above are designed to restore riparian and aquatic habitat in the long term, there exists the possibility of adverse effects in the short term. Treatments within RCAs could disturb vegetation that currently provides shade, road decommissioning could cause short-term increases in sedimentation to streams, and burning and noxious weed treatments could expose bare soil that would persist until native vegetation is established. Road improvements may expose bare soil and cause short-term erosion/ sedimentation effects to water quality. However, diverting roads away from streams would allow streamside vegetation to develop. This vegetation would act as a sediment barrier, improve riparian habitat and increase shade to the stream. Seeding of decommissioned roads with perennial native plants would facilitate total closure, and would aid in the restoration of springs, seeps and wet meadows in and adjacent to the road bed. Short-term impacts, e.g., increased sedimentation, could occur during the removal of stream crossings and subsoiling of compacted road surfaces. On the other hand, the long-term benefits of reducing sedimentation, road density, and the number of stream crossings, increasing shade and native vegetation levels, improving riparian and aquatic habitat, and restoring stream channels to their natural state would greatly outweigh the short-term impacts of road decommissioning.

Further, while LWD placement is designed to enhance riparian and aquatic habitat, a small percentage of LWD structures may fail during storm or high flow events. Such failures may cause localized impacts, e.g., increased sedimentation, bank instability and channel downcutting. Riparian plantings done in connection with LWD placement would help minimize the effects of LWD structure failure by increasing streambank stability via increased rooting depth, capturing sediment and minimizing the detrimental effects of stream channel downcutting. The impacts caused by the few structures that may fail would be greatly outweighed by the benefits to aquatic and riparian habitat that would result from the LWD placement, riparian plantings and other stream restoration activities. All stream restoration activities are designed to ensure that no significant impacts to downstream water quality would occur.

4.4.3 Wildlife

Implementation of Partners in Flight management recommendations would have beneficial effects on landbirds associated with Mesic Mixed Conifer forest habitats by closing roads, minimizing noxious weed invasion, and reintroducing fire, while retaining large trees and snags. These activities would enhance landbird habitat (Altman, 2000).

Each alternative would benefit landbirds to a varying degree, depending on the extent of treatments applied. Alternatives 1, 2, 3 and 5 will produce greater beneficial effects to landbirds than would the No Action Alternative and Alternative 4, because more acres would be treated and more suitable habitat for landbirds would be created under the former. The No Action Alternative potentially would result in tremendous loss of wildlife habitat due to catastrophic events such as fires.

Activities designed to open dense forests and discourage canopy closure would result in the establishment of grasses and shrubs on the forest floor. It is expected that these new communities would remain stable following treatments. This would change the overall landbird species composition from, generally, species that depend upon dense forests habitats to species that rely on open habitats for their life history needs. Some areas of densely forested habitat would be retained in the AA, and would satisfy the life history needs of forest-dependant landbirds. Landbird and other wildlife species diversity would be expected to rise following treatments, as habitat availability improves.

4.4.3.1 Wildlife Cumulative Effects

Activities in the Lookout Mountain area but outside the scope of this plan may include timber harvest on private land. However, because most of the private land in the area has been harvested, additional harvesting likely would not occur for several decades. In the meantime, landbirds that rely upon open grassland and shrub communities may occupy these private harvested lands. Within twenty years, as these areas develop into young forests, bird species that rely upon such habitat would begin to displace the open habitat species. In turn, as the forests mature, landbird species composition again would change in accordance with changes in habitat. As such, the succession of forest habitat communities would increase the numbers and diversity of some landbird species and decrease the numbers and diversity of others.

4.4.4 Rangeland

On rangeland sites, burning prior to seeding with native perennials would remove the thick litter mat that could interfere with grass seed contact with the soil, thereby facilitating germination. It also would remove the accumulation of seeds from undesirable species, including noxious weeds. This would reduce competition for the new desired grass seedlings following germination.

Sagebrush and western juniper cover would be expected to decrease to normal levels with the reintroduction of fire into the ecosystem. In conjunction with other vegetation manipulation projects, this would increase the perennial grass component in the long term and improve forage conditions in uplands.

Sustained or slightly reduced livestock grazing would benefit vegetative communities and soil by leaving plant litter on the ground. This would return nutrients to the soil as well as prevent erosion. Long-term vigor and health of vegetation, including maintenance of soil stability and energy, nutrient, and water cycling, would be maintained across the landscape, except at localized areas of livestock concentrations and areas impacted by existing and future project developments. Project developments would directly impact and displace vegetative communities in the localized area of the project and cause increased trampling adjacent to projects. In the long-term, however, project developments, along with the implementation and maintenance of grazing schedules, will foster vegetative health by improving the current condition of vegetative communities and ensuring that future grazing is done in a sustainable manner.

Livestock will be excluded from prescribed burn and riparian treatment areas for a minimum of two to five growing seasons, either by completely excluding livestock from the pasture in question or by installing a temporary fence around the treated area. The Range Management

Specialist will coordinate with the permittees so as to adjust grazing schedules as needed and to minimize impacts to grazing regimens. Permittees may have to find temporary alternative grazing land for their livestock. Range burns scheduled for the Soda Creek Allotment will have little impact on the permittee, because the need to allow adequate rest to pastures subject to prescribed burns would be mitigated by the availability of alternative pastures. Over time, the implementation of grazing utilization standards could result in a reduction of livestock numbers or of the grazing period based on current utilization levels.

Generally, Alternative 1 would have the most impact, based on the number of acres burned. Alternative 2,3,5, would create mid-level impacts, and Alternative 4 would have no impact.

4.4.5 Cultural Resources

The implementation of avoidance design, and other mitigation and monitoring features would have a beneficial effect by protecting cultural resource sites and information. This includes the highly beneficial effect from actions that stabilize and restore vegetative cover under Rangeland Standards and Guidelines, and from riparian recovery and enhancement treatments that help alleviate the effects of erosion. Shrub treatments and riparian restoration proposals would reduce the effects of erosion on cultural resources and would enhance the cultural component of these vegetation communities, including chokecherry and serviceberry. There are benefits to protection of archaeological and historic sites that derive from prescribed fire activities. A short duration, low temperature prescribed burn is more desirable than a hotter wildfire. Fire breaks, unburned islands and reduction of fuel loads around wooden structures and other fire-vulnerable cultural features would reduce potential for loss by wildfire. Due to common design features, the alternatives do not differ significantly in anticipated effects on cultural resources.

The only currently identified impact to cultural resources under all action alternatives would occur on a 0.3 mile segment of historic logging wagon road crossing BLM land near Sawmill Basin. This old closed logging road, possibly dating from the 1880s, would be modified by upgrading for use as a harvest access road to remove timber from a 40-acre BLM parcel. Alternative 5 proposes less harvest treatment on this parcel, and therefore the length of modification to the historic road likely would be slightly less. To mitigate these potential impacts, information about the wagon road would be recorded. The logging road would be thoroughly documented on both BLM and private land, including photographing and detailed mapping using Global Positioning Systems equipment. With this exception, no conflict between proposed vegetative treatments and cultural resource sites has been identified.

Cumulatively, any of the proposed action alternatives would be expected to elevate the level of protection afforded cultural resources in the project area. The historic and archaeological record for the adjacent Snake River was inundated when Brownlee Reservoir was constructed, and private lands adjacent to BLM-administered land recently have been harvested. Many early rangeland developments on BLM occurred prior to 1976, when inventories and protection for cultural resources was not the norm. Under the proposed actions, past impacts that affected the integrity of cultural resources on BLM land are ameliorated and corrected, with the prospect for long term protection of the historic and archaeological record of this unique mountain landscape adjacent to the Snake River.

4.4.6 Recreation

All action alternatives would cause impacts to the recreation resources within the planning area, although the magnitude of these impacts would vary among alternatives.

Timber harvest, cattle grazing, road construction, and road closure can create adverse affects on recreation. On the other hand, management activities also may restore and improve recreation interests by decreasing the likelihood of wildfire and insect damage, although

restoration can take several years to accomplish. Forest health projects may utilize a variety of silvicultural harvest prescriptions, each with a distinct set of impacts on recreation resources. Silvicultural management prescriptions that retain the greatest amount of canopy generally have the least impact on recreation.

Despite the creation of stumps, harvest and thinning activities would have positive affects on recreation. Harvesting would reduce the hazards from falling trees, making recreation sites safer. Thinning from below would enable sites to receive more sunshine and would create "big tree" campsites, which generally are preferable. As many as ten helicopter landings are proposed under each alternative. Helicopter landings generally are 1-2 acres in size, leveled and compacted, and located adjacent to roads. Once constructed, they tend to be a permanent feature on the landscape. These sites would contribute to recreation by providing new camp site and parking areas, or they would detract from recreation by destroying established campsites. Their short-term effects consist of dust, noise and increased traffic during harvest activities. It should be noted that working helicopters often attract recreators.

Under all action alternatives, stumps would be created and potentially would offend some users visually or emotionally. Also, recreational users may find changes to areas they have visited in the past; these changes could be comprised of reduced access, landscape changes, and/or changes in vegetation.

Treatments other than commercial harvesting, including mountain shrub and aspen treatments, would have minimal effects on the recreation resource. Only small quantities of slash would be created, and would be subject to disposal. The introduction of prescribed fire would have a negative short term effect by creating blackened areas. The short-term negative effects of an underburn will persist for up to three recreation seasons, but the long term effect will be positive.

The PFA and Mountain shrub timber harvest treatments will have minimal negative effects on the recreation resource. The PFA treatment areas are very scattered; unless one of the openings is created in the same location as a dispersed campsite, there would be no conflict. Mountain shrub treatments that harvest economically valuable trees may have a somewhat greater impact on recreators. Isolated areas of heavy disturbance caused by these treatments potentially would make foot travel difficult or interfere with current hunting techniques, in which case a negative impact would ensue.

Opportunities for dispersed camping would be increased pursuant to the project. Small, dispersed areas for camping would be left open and leveled at desirable locations. Further, semi-primitive motorized recreation opportunities would continue to be provided in the Lookout Mountain Geographic Unit. Big game and upland bird hunting will remain a high quality experience along with high success rates.

Uninventoried dispersed camping sites exist throughout the study area. All action alternatives will affect these sites and their users to some degree. Harvest and thinning activities could change the availability and appeal of dispersed campsites by reducing shade, reducing aesthetic quality, creating slash and stumps, scarring residual trees, disturbing ground vegetation, increasing soil disturbance, increasing noxious weed populations, blackening sites with prescribed burning and slash disposal, and/or disturbing access routes. The duration of the negative impacts would depend upon the suite of pre-harvest, harvest, and post-harvest activities planned and the proximity of these activities to recreation sites. For example, a small shift in locating a skid trail, or selection of leave trees, or avoidance of a particular spot can go a long way in reducing the negative impacts. Considering that even slight alterations, let alone large-scale vegetative manipulation, can have negative impacts on the recreation experience, treatment activities would be sited so as to mitigate these impacts.

All action alternatives may entail implementation of improvements at Bassar Diggins, although funding for these improvements has not been identified. The effects of the proposed

improvements on the recreation resource are positive. Bassar Diggins offers variety to users, as the only site on Lookout Mountain that offers any level of development. The proposed construction of a range fence around Bassar Diggins would prevent livestock from gaining access to the site and causing negative impacts.

Proposed rangeland burns would have only short-term effects on recreation, although fences erected following burning activities may create a nuisance for hunters and OHV users. However, the new fences are located along ridgelines. The area is so deeply dissected that hunters and OHV riders are more likely to travel parallel to the fences rather than to cross them, and so the impact of these fences is expected to be minimal.

Approximately 1.3 miles of currently closed roads will be re-opened for the duration of harvest activities and then closed. Many acres will be treated in two entries, which would require that these roads be opened before each and closed after each entry. It is possible that recreators will establish use of these roads and become resistant to their closure. Timber harvest activities potentially would create conflicts with the recreating public. Increases in traffic volume and dust production would raise safety concerns. New roads may bring new opportunities for random trailing and unauthorized off-road use by OHV users. Plus, despite the fact that the BLM will post road closure signs, and will enforce closures, the closure and rehabilitation of existing roads in a manner that will preclude unauthorized OHV use and consequent resource degradation will be difficult to achieve. Closure of existing road generally is not viewed favorably by recreation users and hunters. Newly closed roads would be signed as closed to motorized vehicles, including OHVs. Unauthorized use would be monitored, and appropriate corrective actions taken.

Riparian restoration treatments may have affects on the recreation resource. Placement of large woody debris and improving the health and quantity of shrubs in riparian areas would hinder access to creeks, thereby frustrating hunters and OHV riders. A few campsites may be lost pursuant to riparian treatments. However, improvements in water quality and quantity will have a positive affect on recreators who value a more pristine outdoor experience.

Noxious weed treatments will have a positive affect on recreators. Many noxious and nuisance plants are unwelcome when camping, hiking, or biking, and their elimination would enhance users' outdoor experience.

Economic impacts of the alternatives on recreation use in the analysis area may be minimal if hunters are not adversely affected. Short-term displacement may occur in areas where treatment or harvest activities are ongoing. Similarly, road closures may affect vehicular access to certain areas, but it is assumed that affected recreators would relocate to different parts of the project area rather than not enjoy the area at all.

4.4.7 Visual Resources

All action alternatives would involve amending the current Lookout Mountain VRM classification structure. The entire GU now is classified as Class II; as previously discussed, Class II would be retained in some areas, while others would be changed to Class III and Class IV. Refer to the attached VRM map for particular locations and acreage of Class changes. The changes would be done so as to more accurately reflect current visual resource conditions and desired future conditions. Following the changes, VRM classification acreages for the entire GU would be as follows: Class II - 14,954 acres; Class III - 6786 acres; and Class IV - 15,275 acres.

The BLM is directed in BLM Manual 8400 to manage the public land base according to its respective VRM management objective classifications. Frequently, meeting long-term VRM objectives necessitates not meeting short-term VRM objectives. Short-term deviations from stated VRM management objectives may be necessary in order to meet these objectives in the long term.

Landscape/visual analysis addresses two issues, the first of which is Lookout Mountain itself and its fringe of solid green vegetation as seen from a distance. This background view is the primary concern to Baker County residents and others visiting or driving through the area. No management activities are proposed that would affect this view. The second issue of concern is the interior view dominated by stands of aspen interspersed with the dark green coniferous forest. The visual resource effects analysis assesses the impacts of proposed activities on this view.

Impacts to visual resources are definable as management actions that alter the existing landscape and, in so doing, affect scenic quality. Timber management actions and road construction commonly affect scenic quality. Harvest units can create uncharacteristic straight lines by removing the mature tree canopy. In addition, new roads and logging systems can create corridors and lines within the landscape and thereby degrade visual quality. Conversely, silvicultural management prescriptions that retain the greatest amount of canopy generally have the least visual impact. Contrast in the texture of the vegetative canopy and with surrounding soils is greatest with regeneration harvests. Textural contrast related to the loss of mature tree canopy is usually apparent for 50 or 60 years after harvest, although the visual impact is greatly reduced when trees reach a height of 20 feet (approximately 20-30 years).

Regeneration harvests, road construction, and most other timber management practices change vegetative patterns, alter species composition, disrupt the land surface and, thereby, cause visual impacts. The severity of an adverse visual impact depends on many factors including type of harvest; location, number, size, and shape of cutting units, yarding method, location and design of roads, amount and treatment of logging slash and road construction debris, and visibility of disturbed areas. The preharvest condition (i.e., scenic quality) of a viewshed is also a determining factor. Generally, viewsheds that are noticeably altered can be further modified with less adverse visual impact than viewsheds with little or no visible alteration. In some situations, visual impacts from timber management practices can be beneficial. Examples are thinning foreground vegetation to create pleasing views and the manipulation of contrasting cutting boundaries, especially on ridge tops.

In order to analyze the effects on the visual resource, five key observation points (KOPs) were established. Four of these KOPs are located at vista points along the Lookout Mountain Road, and the fifth is in the Bassar Diggins recreation site. The proposed activities within the visual distance zone of each KOP were analyzed to assess whether the change would attract attention but not be dominant to the casual observer. The KOPs are all located within areas bearing a VRM Class II designation. These areas have the highest concentration of proposed vegetation management activity and therefore bear the highest probability of not meeting visual quality objectives.

KOP #1 - Lookout Mountain, at the base of the lookout tower.
KOP #2 - A vista point on Lookout Road near BLM boundary near head of Sisley Creek.
KOP #3 - Within Bassar Diggins recreation site.
KOP #4 - A vista point on Lookout Road above Morgan Creek just south of the largest Juniper unit.
KOP #5 - A vista point on Lookout Road near the head of Hibbard Creek.

All action alternatives would impact visual quality within the GU, although the magnitude of the impacts varies among the alternatives. The aesthetic quality of the area would be modified from one of natural environmental conditions to one of a managed environment. However, the level of change depends on the amount of timber harvest undertaken, the extent of new road development and the type of logging system utilized.

Ground-based logging systems result in disturbance that may be visible as color contrasts for 5-10 years following completion of logging activities. Straight line corridors created by cable logging systems may be visible for 20-30 years. Helicopter logging typically results in less

ground disturbance, with visual effects lasting 1-2 years. Harvest units can be blended with the surrounding landscape under all logging systems, but the ability to minimize visual impacts is more limited with ground-based tractor methods. Under helicopter yarding systems, unit boundaries can be made more irregular and skid trails are not used, minimizing straight line edges and creating a more natural appearance. Visual effects also are reduced under this method because soils and residual vegetation are subject to less disturbance. Fewer landings and roads are required, although landings usually are larger. Visual effects caused by landings persist for many years.

Roads that are re-opened or constructed may be evident for at least 10-15 years before vegetative growth provides screening, even if they are temporary roads that are closed after harvest. Visual resource impacts of even temporary roads tend to be long term, particularly because modern OHV technology enables users to gain easy access to well-closed roads even in the face of aggressive road closure enforcement. Although signs will be erected indicating that closed roads are off-limits to motorized vehicles, including OHVs, and enforcement actions will be taken, effective closure is very difficult to achieve.

Range burns have a short-term impact on visual resources. The impact would be reduced by planting and by the temporary exclusion of livestock from burn areas so as to hasten re-growth and soften color contrasts. Proposed fencing for livestock management would have a negligible impact on the visual resource, being temporary in nature and creating little contrast.

Slash disposal and prescribed burns impact the visual resource. Fuel levels in Douglas-fir stands would be reduced from the current 10 to 20 tons per acre to no greater than 5 tons of scattered fine fuels per acre, resulting in a fire model 8 across the forested landscape. The visual impact is minimal at this level.

All prescribed burning activities would create the short-term visual effects of producing visible smoke and modifying natural color schemes (blackening within burned areas). Smoke will cause a very temporal impact, being noticeable only for hours or a day after burning is complete. Modification of natural color schemes typically are not noticed by casual observers within 5 months to 1 year after burning has taken place. Grasses and shrubs quickly re-sprout and cover blackened areas, helping to soften the immediate visual effects of the burning.

Within the Class II zone along the Snake River, two units of prescribed fire are planned adjacent to the well-traveled Snake River Road. Burning this rangeland would produce short-term effects that would violate Class II VRM standards, inasmuch as the change in the landscape would be visible and attract attention. However, within one growing season, the effects no longer would be visible to the casual observer and again would meet Class II objectives.

One unit of “Juniper” treatment also would be sited within a Class II area, at the top of the ridge and in the background view of travelers on the Snake River Road. The VRM Distance Zone map identifies the unit as being located on “lands visible from significant routes.” It is evident that the significant route is the Conner Creek Road. This treatment would meet Class II VRM standards.

Proposed treatments within RCAs, including large woody debris placement, planting and seeding, may dominate the foreground view in isolated locations, but would not be noticeable from any of the KOPs. These impacts would be short lived, as the treatments would improve the health of riparian ecosystems and, over time, their visual quality.

Noxious weed treatment would have a positive affect on the visual resource by eliminating visually displeasing weeds without resorting to ground disturbing methods.

Within the Class IV zone, all proposed activities meet VRM management objectives in all alternatives.

The effects on the viewshed vary with each alternative but any harvest activity on public lands would degrade visual quality to some degree. Considering that private lands in the area have undergone varying degrees of logging in the relatively recent past, any harvesting on public land would create a cumulative effect on visual resources. Like direct effects, this cumulative effect also would vary by alternative.

4.5 Effects of Alternative 1

4.5.1 Forests and Woodlands

This alternative would reduce the long term risk of stand replacement fire within the Douglas-fir stands within the GU.

The thin, thin/mistletoe and PFA treatments would reduce stand basal area to levels recommended by Cochran et al. (1994). Thinning would open up stands to provide better air movement and increased light, dramatically reducing the risk of a Douglas-fir bark beetle outbreak. Untreated immature and dense stands would continue to carry a high risk of bark beetle attack.

Mistletoe treatments effectively would remove mistletoe from stands with high infestation levels. In order to prevent the spread of mistletoe, no infected trees would be retained in proximity to uninfected trees. Some infected trees would be retained in patches, although buffers around these patches would prevent mistletoe from spreading into new stands. Untreated mature and old forest stands would continue to bear high mistletoe infection levels. Heavily-infected trees would continue to be stressed and eventually would be killed by bark beetles.

Approximately 363 acres (41%) of old forest would not be treated, and would retain old forest characteristics over the short to mid-term. Most of these retained old forest stands are heavily infected by mistletoe. Over the next 50 years, approximately 60% of the large old trees in these stands will be weakened by mistletoe and killed by bark beetles, thereby increasing fuel levels and the risk of catastrophic wildfire. Also over the long term, mature stands containing trees between 120-150 years old slowly will acquire old forest characteristics. This phenomenon, combined with continual mortality and regeneration in current old forests, would result in a change in the location of old forest stands over time.

Under this alternative, conifers would continue to encroach upon all 857 acres of existing aspen stands and 899 acres of mountain shrub habitat, causing the health of those stands to decline. On the other hand, several factors would counter the effects of that trend. First, implementation of rangeland S&Gs would facilitate aspen and mountain shrub regeneration and the development of multi-aged aspen stands and shrub habitat. Second, the harvesting of Douglas-fir stands likely would result in increased acreage of aspen and mountain shrub habitat over the short to mid-term. Last, as the canopies of the harvested Douglas-fir stands close over time due to the growth of residual and planted trees, the long-term decline of untreated mistletoe-infected Douglas-fir stands would open new sites for aspen and mountain shrub growth. Overall, the acreage of aspen habitat type probably would not change substantially over the long term.

Alternative 1 would manage the mountain shrub communities, with an emphasis on regeneration of desired shrub/hardwood species in decadent stands that currently support little or no reproduction. All of mountain shrub species found in the GU tend to respond quickly to fire with vigorous re-sprouting. Prescribed broadcast burning would remove the decadent shrub overstory, release nutrients to the soil, and thereby provide suitable growing conditions for new shrub sprouts.

Prescribed fire effectively would restore old, decadent aspen stands by stimulating sprouting and releasing nutrients to the soil. Without burning, most of these communities ultimately would be converted to Douglas-fir and/or juniper stands.

The lack of fire over the past several decades has allowed juniper to expand from the rocky ridge and outcrop sites where it is protected from fire into other vegetation communities. Many of these sites now have little or no ground cover under the heavy juniper canopy. Juniper management treatments would improve watershed conditions by allowing the natural re-establishment of native bunchgrasses, forbs, and shrubs on sites now dominated by juniper.

4.5.2 General Fire Effects

Much of the Lookout Mountain GU is dominated by granitic sandy soil, and, as such, increased risk of soil erosion is of primary concern with any proposed activities. Short term effects from the proposed burning activities would include some risk of increased runoff and stream sedimentation until vegetation re-sprouts or germinates after the burn. Unless otherwise required for the accomplishment of a specific management objective, all prescribed burns would emphasize short flame length and low intensity heat whenever possible, so as to reduce effects to soils and desirable vegetation.

All prescribed burns in mountain shrub, aspen, and juniper stands would be planned in coordination with forest health slash burning and broadcast burning projects in order to limit to 350 the number of acres burned in any given year within individual upper watersheds. This acreage limitation would not apply to lower elevation rangeland prescribed burns.

Overall, the timber harvests, thinning projects and broadcast burns envisioned under Alternative 1 would reduce the risk and severity of wildfire starts. As a result, wildland fires within treated areas likely would be smaller, and suppression actions would be easier and less dangerous. Such fires would burn with less intensity due to reduced fuel loadings and the recovery time for vegetation would be quicker.

4.5.3 Watersheds and Fisheries

This alternative proposes the highest number of acres (604) for mistletoe treatments and therefore has the highest risk of creating additional impacts to fish habitat from harvest activities. The mistletoe treatments will remove most of the basal area in the stands, potentially causing hydrologic effects, such as increased sedimentation and changes in peak and base flows, that would create additional impacts to existing fish habitat. Although the use of buffers in RCAs would protect riparian areas and fish habitat during harvest activities, some impacts would not be completely mitigated.

Ground harvesting methods would be used on 40% of the treated acres, cable harvesting on 17%, and helicopter logging on 43%. Helicopter has the least impact, and ground removal presents the highest impact, bearing the risk of additional ground disturbance and soil compaction. Under this alternative, more acreage would be harvested by ground methods than under any other alternative.

This alternative proposes no treatments of aspen stands. Existing clones next to streams would decline and, without treatment, would continue to die. Streamside shade would be reduced and the loss of trees would promote the reduction of streambank stability and loss of riparian/wetland habitat. On the other hand, hardwood planting would occur along 11.4 miles of stream, and would provide some measure of streambank stabilization and shade.

This alternative will restore 11.4 miles of stream, the lowest number of miles of any action alternative. Approximately 36 miles of stream identified as needing restoration would not be restored. The proposed timing of restoration activities is two years prior to any commercial

harvest. This lead time will promote the rebuilding of stream habitat so as to facilitate sediment capture prior to disturbance.

It is expected that fish habitat would slowly improve as Standards and Guides for Range Management (S&Gs) are implemented and restoration activities are undertaken.

4.5.3.1 Riparian Areas

Streams and riparian areas in need of but not designated for restoration would continue to be degraded. Erosion of bare soil streambanks would result in the widening of the channel, causing the loss of riparian habitat, water table function, and wetland/riparian habitat.

4.5.3.2 Water Quality

Because this alternative proposes the least amount of restoration for stream habitat, impacts to water quality would continue. Stream temperatures would be reduced over time as riparian areas revegetate, and sediment would be reduced as utilization standards are implemented for riparian areas. Some streams in the AA would continue to contribute abnormal amounts of sediment to the Burnt, Powder, and Snake Rivers.

Under this alternative, 4836 acres would be burned by prescription following harvest, the second highest prescribed fire acreage of any alternative. Because most soils are very erosive and shallow where good vegetative cover is absent, burning would temporarily increase the risk of additional sedimentation to some streams, causing water quality problems.

4.5.3.3 Roads

Roads that would not be improved (Conner and Hibbard Creek roads) would continue to cause sediment-related water quality problems. Roads in the vicinity of springs and stream crossings would continue to erode. Roads not slated for decommissioning (Upper Hibbard, Daly and Gold Creek roads) would continue to create impacts to fish habitat, riparian areas, and water quality.

4.5.3.4 Cumulative Effects

Although the planned restoration will help stabilize streams, improve water quality, stabilize sediment, reduce down-cutting and erosion, and slow down the loss of the water table on 11.4 miles of stream, this alternative does not provide for the treatment on 36 miles of stream needing restoration. Streams with no restoration will continue to undergo a decline in function and condition. While hydrologic processes that impact landowners downstream of BLM-administered land are not all controlled by the BLM, forgoing restoration upstream will contribute to accelerated flows, down-cutting and loss of riparian areas and aquatic vegetation downstream. Although treatments under Alternative 1 will stabilize some of the upper watershed, and thereby possibly help to restore downstream watercourses on private land, this alternative does the least of all action alternatives to improve the upper watersheds and overall watershed health because it entails restoration of a limited number of miles of streams and riparian areas. Only a fraction of the recommended total stream mileage in the AA would be restored, and only some of the roads that should be closed would indeed be decommissioned.

4.5.4 Wildlife

4.5.4.1 Big Game Wildlife

Approximately 1730 acres of immature, mature, and old forest Douglas-fir forests would be treated under this alternative, representing approximately 59% of the forested habitat that occurs in the Lookout area. Approximately 604 acres would be treated with a mistletoe

Table 14. Proposed Restoration for Alternative 1

Stream	LWD/RIP	RIP ONLY	NXWEED	SEED	LWD/RHCA
Gold Creek	0.49 m.				
Sisley Creek	0.83 m.				
Fox Creek	1.46 m.				
Hibbard Creek	2.12 m.				
Morgan Creek	1.57 m.				
Spring Gulch	1.98 m.				
Pole Gulch	1.99 m.				
Conner Creek	0.27 m.				
Daley Creek		0.72 m.			
Totals	**10.71 m.**	**0.72 m.**			

prescription that would attempt to eliminate most of the mistletoe infected trees in the forest stands. This would reduce canopy cover of these stands to less than approximately 10%. Approximately 1126 acres would be treated using a thinning prescription or thin-mistletoe prescription, reducing canopy cover for these acres to less than 35%.

Approximately 1730 acres of the forested habitat in the Lookout area would be treated under this alternative, in addition to 1254 acres of mountain shrub vegetation. About 437 acres of these mountain shrub vegetation communities treated in this alternative have tree canopy cover greater than 40%, providing cover for deer and elk.

The treatments planned for all forested acres would reduce the effective thermal cover in the AA by 1575 acres. Currently, approximately 1057 acres of forest is satisfactory condition thermal cover for wild ungulates and approximately 1445 acres of forest is marginal condition thermal cover. Forest treatments under this alternative would reduce the total amount of effective thermal cover in the AA by approximately 63%. The impact of this reduction would endure for decades, inasmuch as forests in which canopy cover is reduced to below 40% and no replanting is undertaken would not provide effective cover for at least 50 years. This would represent a moderate to high impact on use of the area by elk for thermal cover. On the other hand, because elk and deer use the area primarily during the summer, forage, not thermal cover, is the limiting factor. Further, additional cover would become established in the area, as forests that are not subject to complete canopy removal continue to develop.

Approximately 1049 acres of hiding cover currently exist within the AA. Treatments of forested, mountain shrub, and aspen habitat under this alternative would reduce hiding cover for wild ungulates in the AA by about 768 acres. This effect would be short term, as shrub vegetation would be expected to redevelop to the point where it would provide hiding cover within approximately 10 years.

The plan to use prescribed fire on treatment areas following the final harvest entry would present an immediate impact on wildlife due to disturbance associated with fire and fire management activities. Many wildlife species disturbed during prescribed burning would return to the AA within a relatively short period. However, much of the existing grass and shrub vegetation would be burned out from the understory, thereby precluding associated wildlife species from making unlimited use of the area until the shrub and grass communities recover. Approximately 13%, or 171 acres, of grass communities within forested stands in the AA would be burned under this alternative. These communities would be expected to recover within 1-2 years following burning, at which point they would provide higher quality forage for big game species in areas that currently are decadent and lack regeneration. Shrub

communities would recover in about 5-10 years, and again would provide hiding cover and foraging habitat for big game and many other wildlife species. Invigorated growth of shrubs and grasses would provide more palatable and nutritious forage for wildlife species, where pre-burn forage was decadent.

Prescribed burns would decrease the amount of forage available for deer and elk on about 1285 acres of grasslands along the Snake River. This impact would be short-term, as native grass seed would be spread over these treated acres. Increased nutritive quality of available grasses after seeding would result in increased use of the area by big game during winter and early spring.

With the conversion of 1730 acres of densely forested habitat to open forest, grass and shrub communities, and the prescribed burning of these communities, there would be an increase in the amount of forage available for deer and elk within approximately 2-5 years. Because of the exposure of the forest floor to sunlight, native grasses, and soon afterward shrubs, would re-vegetate treated areas and provide forage and hiding cover for deer and elk. Further, the 1254 acres of treatments in mountain shrub communities also would provide for forage for deer and elk within 2-5 years. In general, increased quantity and quality of forage would increase the likelihood that elk and deer would move onto public lands, helping to meet the an ODFW objective of moving elk and deer off of private lands and decreasing the amount of agricultural damage caused by these animals. Following prescribed burning, the planting of native bunchgrass species and treatments to control noxious weeds, high quality forage would replace annual grasses such as the prominent medusahead.

Because treated areas would lose there effectiveness as hiding cover, exposure to hunting pressure would increase for deer and elk in the short term. Shrubs would reestablish, however, and begin to provide hiding cover for deer and elk within 5-10 years.

Overall, there is no expectation that numbers of big game animals in the AA would fluctuate as a result of treatments undertaken pursuant to this alternative. However, continued pressure from hunting, and the establishment of more high quality forage in the area should result in healthier herds of elk and deer in the area.

4.5.4.2 Big Game Wildlife Cumulative Effects

Timber harvesting has occurred on private lands in the Lookout Mountain vicinity, resulting in the conversion of densely forested areas to grass/shrub communities. Additional harvesting is scheduled for other private lands in the area, so that all or most of the private land adjacent to the AA would be converted from closed forest vegetation communities to open forest vegetation communities, shrub lands, and grasslands. Thermal and hiding cover has been all but eliminated on these areas, and deer and elk have been forced to use public lands or other private lands in the general area for these habitat requirements. Because of the timing of the treatments associated with Alternative 1, cumulative effects to big game would be moderate. The first series of treatments would occur within 5 to 8 years and the next series of treatments would occur in 10-15 years. After approximately 15 years there would be a moderate loss of cover habitat and dense forest habitat throughout the Lookout Mountain Area. Most, if not all, of this forest habitat would never re-establish itself. Periodic underburning and precommercial thinning would prevent fir trees from reestablishing and again developing into a dense forest. There would, however, be an increase in forage for wild ungulates. With activities designed to open up the dense forests and discourage these vegetation communities from re-establishing, grasses and shrubs under the forest canopy would increase and remain stable for years following the treatments. This would change the overall wildlife species composition of the area from species that depend upon dense forest habitats to species that rely on open forest habitat for their life history needs.

4.5.4.3 Special Status Species

Northern Goshawk - Considering the one nesting pair of northern goshawks known to exist in the Sisley Creek sub-watershed, management recommendations would follow Reynolds, et. al. (1992) for habitat modifications and goals within the Post-fledgling Family Area (PFA) and nesting stands.

Treatments proposed under this alternative substantially would modify suitable habitat for the northern goshawk outside of the goshawk management area. Proposed treatments
would reduce potential nesting habitat by approximately 1730 acres, leaving approximately 1197 acres of suitable nesting habitat within the AA.

The treatments within the forested stands associated with this alternative would contribute to the development of healthy forests that are necessary to provide future nesting habitat for goshawks. As younger forest stands grow into older stands, they provide nesting and foraging habitat. As such, it is recommended goshawk habitat in and around the nest site include a diversity of age classes and seral stages of forest stands. With approximately 3400 acres (BLM and private) of suitable nesting habitat in the Lookout Mountain vicinity, reduction by 1730 acres would leave approximately 50% nesting habitat. Goshawk habitat management guidelines, on the other hand, recommend retention of 60% of young, mature, and old forest habitat. Nonetheless, within 50-75 years, as stands continue to grow and develop, the quality and quantity of goshawk habitat would increase in these treated stands. Stands untreated and characterized by high levels of mistletoe infestation, however, would deteriorate, and, overall, goshawk habitat quality and quantity would decline.

An increase in open areas brought about by forest health treatments would provide habitat for rodents that rely on seed sources and new grass and forb growth for food. These small mammals are the main prey for goshawks. Therefore, the treatments planned for this alternative would increase the prey base for goshawks and potentially increase the health and, minimally, the number of goshawks located in the area.

Northern Goshawk Cumulative Effects - As forested habitat on private land surrounding the public land is harvested and modified to open forest grassland communities, habitat on public land becomes more critical for the continued nesting and occupancy of goshawks in the area. Treating the public lands in a manner that prevents or minimizes impacts that would occur pursuant to a catastrophic fire event would ensure retention of northern goshawk habitat in the area. Without the treatments of heavily invested mistletoe stands, the overall quality and quantity of goshawk habitat in the AA would decrease in the short to mid term then build to half the current levels in the long term.

Sage Grouse - Under this alternative, sage grouse would be impacted by the modification of sagebrush habitat by prescribed fire. Approximately 200 acres of sagebrush habitat would be burned for rangeland improvement purposes, reducing the amount of potential sage grouse habitat in the AA by approximately 2%. This impact would be considered negligible.

Rangeland management through the implementation of Standards and Guides would improve sagebrush habitat within the AA within approximately 10 years. Improvement of the sagebrush communities would provide higher quality habitat for sage grouse and other sagebrush obligate wildlife species. Increased growth of grasses following range burns and more intensive rangeland management would increase potential early brood rearing habitat for sage grouse.

4.5.4.4 Other Wildlife Species

Approximately 1197 acres of forested habitat would retain current conditions, and would continue to provide mistletoe brooms that are favored by blue grouse. This alternative also would provide park-like forests and down woody material, which are major characteristics of preferred blue grouse nesting habitat (Pelren and Crawford, 1999).

Overall, the number of wildlife species in the area that are dependent upon densely forested habitat would decrease, while populations of wildlife species that rely on open forested habitat, grasses, and shrubs would increase. The composition of wildlife species would change concurrently with changing habitat conditions.

4.5.4.5 Roads

Following treatments, approximately 83.4 miles of open road would exist in the AA under Alternative 1. This equates to approximately 1.4 miles of open road per square mile in the AA, which falls within the 1.5 miles per square mile standard that is used to as a yardstick for minimum habitat effectiveness for big game. Therefore, road miles would have only a minor impact on big game in the area.

Roads impacting riparian habitat essential to wildlife would be decommissioned and rehabilitated, thereby decreasing impacts associated with disturbance from vehicles traveling through the area. Although road miles in the area would increase slightly, conscientious road siting would minimize impacts to high quality wildlife habitat such as riparian areas. Further, eliminating roads from high wildlife use areas would decrease disturbance to big game during hunting seasons and would effectuate higher quality hiding cover. In all, the expected road-related impacts on wildlife would be low to moderate.

4.5.5 Recreation

While overall recreation use within the analysis area would remain near the same levels as previous years under this alternative, traditional use patterns and recreational opportunities would be impacted.

The treatment of 1730 acres of Douglas-fir stands would have a negative effect on recreation, regardless of whether said treatment would consist of thinning from below, regeneration harvest, or thin/mistletoe. Treated acres no longer would be considered primitive, and treatment would be evident through creation of stumps, slash, skid trails, and damage to residual trees. All timber harvest acres would impact off-road travel, including foot and OHV. The aesthetics of individual campsites would be impacted if harvest activities are visible.

This alternative is not designed to protect or enhance aspen stands. Aspen stands are important for recreation inasmuch as they provide vegetative variety, fall color for viewing, and lush shade for camping. Lookout Mountain's extensive aspen communities provide an experience for recreationists that largely is unique in eastern Oregon. Damaging aspen clones and favoring Douglas-fir would have long and short-term negative effects on the recreation resource.

Under this alternative, 5.1 miles of existing roads along Sisley, Fox Daly and Canyon Creeks would be decommissioned. These roads are located adjacent to the creeks and have traditionally provided access for hunting and other recreation. Also, limited dispersed camping occurs along these roads. Two new roads would be built along the ridges of Sisley and Fox Creeks; these roads would provide access into the Sisley and Fox Creek drainages. Based on past observations, motorists likely would do everything within their power to continue to use the roads along the creeks. Decommissioning would need to be extremely effective so as to ensure that users would be discouraged enough to choose to utilize the replacement roads.

The Sisley Creek Road provides four-wheel-drive vehicles with access to the cabin at Sisley Creek. A ridgeline road suitable for two-wheel-drive vehicles would replace the existing road, thereby improving access. The cabin currently is open for use. With improved access, the opportunity for vandalism and conflicts in use would be expected to increase. Improved access also provides a different type of recreation opportunity. The cabin now sits in a secluded meadow, surrounded by aspen and adjacent to a creek. Improved access and potential increased use would provide an opportunity to more actively manage the cabin as a recreation site.

Approximately 1.3 miles of road would be opened for temporary use and closed after harvest activities are concluded. Any roads that become passable to vehicles or OHVs will draw recreational use. The longer they are open and passable, and the more established that use becomes, the more difficult it is to close them effectively. Since hunting is the primary recreation pursuit, and use of OHVs is increasing dramatically, it must be assumed that road closure will be difficult and that residual use of the closed road will continue despite the fact that the BLM will post road closure signs and aggressively enforce closures.

There are many established dispersed campsites that would be affected by vegetative treatments under this alternative. Campsites located in the meadow at the base of Lookout Mountain particularly will be affected, inasmuch as they fall in or near the mistletoe treatment area. Since this treatment is essentially a clear cut, these campsites would be destroyed. The Hibbard Creek Corral site is within a thinning unit and may be affected by the prescribed treatment, depending on which trees will be retained and ground disturbance within the site. The site falls within a unit designed for ground logging methods.

The overall impact of this alternative would be to transform the majority of the project area from a “semi-primitive motorized” setting to “roaded natural” within the Recreation Opportunity Spectrum (ROS).

4.5.6 Visual Resources

KOP #1 - The mistletoe treatments that would be visible from KOP #1 would not meet Class II objectives, because these treatments essentially would remove all trees from approximately 600 acres. Removing this conifer stand would strongly change the form and texture components on the landscape and would be a dominant feature to the casual observer.

A shrub/hardwood treatment area also is visible from KOP #1. The management emphasis for this treatment would not create a strong contrast or change, and hence it would meet Class II objectives in the long term.

Treatments in the PFA would meet Class II objectives insofar as the 60 or fewer two-acre openings these treatments would create generally would blend with existing vegetation. Effects of the treatments would be visible, but not dominant. Although these treatments would change color from green to increased yellow, they would entail no focal point change. However, if straight line skid trails are created to remove logs, they would create a long term contrast of line.

The new 1.25 mile permanent road along the ridgeline above Sisley Creek would be visible from KOP #1 and has the potential to be a dominant feature within the viewshed. This road would not meet Class II objectives in the short or long term. Mitigating measures would reduce visual impacts but still not meet Class II.

KOP #2 - The PFA unit would blend as described above. The prescribed fire unit would have short-term negative impacts only. These two treatments visible from KOP #2 were found to meet Class II objectives.

The thinning unit in the foreground from this KOP will not meet Class II due to reduction of basal area which changes texture and form. It opens up the stand to the point it would attract attention because it currently is a solid mass of green.

The new 1.25 mile permanent road along the ridgeline above Sisley Creek would be visible from KOP #2 and presents the effect described above for KOP #1.

KOP #3 - Proposed activities would not meet Class II objectives insofar as there would be a strong change in form and color in the short term and long term due to the conversion of the mixed aspen/Douglas-fir stand to a mainly Douglas-fir stand. Mitigating measures would reduce the impacts but still not meet Class II.

KOP #4 - The juniper vegetative treatment visible from KOP #4 would not meet Class II objectives, because juniper skeletons and stumps left on site would draw the casual observers attention for several years. The color of the stands would be changed from mottled brown to solid brown with a change in texture, form, and color. A "bald knob" would be created.

The Douglas-fir thin treatments visible from this KOP would meet Class II objectives. The thinning of the conifer stand would aid in the transition across the viewshed by softening the effect of form, line, and texture contrast.

KOP #5 - The Douglas-fir stands visible from this KOP appear as a solid texture of dark green conifer in the fore and middle grounds. Treatments within these stands would reduce the basal area to the extent a strong contrast in line, color and texture would result. Therefore, these treatments would not meet Class II objectives.

A permanent new road would be built on the top of the ridge between Fox Creek and Hibbard Creek, and would be visible from this KOP. Absent implementation of mitigation measures, this road construction would not meet Class II objectives.

Overall, the proposed vegetative management actions in Alternative I would create significant changes in the visual resource, and would diminish the unique visual character of Lookout Mountain.

4.6 Effects of Alternative 2

4.6.1 Forests and Woodlands

The thin, thin/mistletoe, thin/mistletoe/aspen and PFA thinning treatments would reduce stand basal area to at or below levels recommended by Cochran et al., 1994. These thinnings would open up stands which would provide better air movement and light into the stands, dramatically reducing the risk of Douglas-fir bark beetle infestation. Untreated immature stands would continue to carry a high risk of bark beetle attack.

The mistletoe treatments effectively would remove mistletoe from stands that currently bear high levels of mistletoe infection. Buffers around pockets of retained infected trees would prevent mistletoe from infesting newly generated stands. High mistletoe infestation levels would continue to afflict untreated mature and old forest stands, and heavily infected trees would continue to be stressed by mistletoe and eventually killed by bark beetles. It is expected that approximately 60% of the large old trees in these stands would die in this manner over the next 50 years, thereby adding to existing fuel levels and increasing the risk of catastrophic wildfire. Also over the long term, mature stands with trees between 120-150 years old slowly would acquire old forest characteristics. Further, maturation of forest stands in combination with harvest of other old stands and loss of some stands to insect attack would cause the location of old forest stands to shift on the landscape.

Mistletoe treatments in stands containing an aspen component would release the aspen. The extent and vigor of aspen stands would increase as a result of these treatments. Replacement of aspen stands by invading conifer would be slowed dramatically in the short term, although eventually the planted Douglas-fir would shade out the aspen. Further, implementation of rangeland standards and guides will improve aspen regeneration and enable aspen stands to develop multi-aged characteristics. Aspen and aspen/mountain shrub habitat type would also increase over the short to mid-term due to the harvest opening of Douglas-fir stands. Although it is expected that the canopy of those Douglas-fir stands would close again through growth of residual conifers and maturation of planted trees, the long-term decline of untreated mistletoe-infected Douglas-fir stands would open new sites for aspen growth. It should be noted that, since fewer mistletoe-infected stands would be treated and replanted to Douglas-fir than in Alternative 1, more of these stands would convert to aspen over the long-term. Overall, number of acres of aspen and aspen/mountain shrub habitat type would increase over the long-term under this alternative.

Under Alternative 2, the number of acres of mountain shrub habitat would increase and the rate of loss of mountain shrub habitat due to conifer encroachment would be reduced over the short to mid-term. Treatment, including prescribed fire, on 869 acres of mountain shrub habitat would restore plant vigor and create a mix of age classes. The ongoing process of conifer encroachment, shading, and loss of mountain shrub habitat would continue on 1285 acres, although the aforementioned juniper treatments in old mountain shrub types also would increase the number of acres of mountain shrub-dominated sites. Since fewer mistletoe-infected stands would be treated and replanted to Douglas fir than in Alternative 1, more of these stands would convert to shrubs over the long-term. Overall, number of acres of mountain shrub habitat type would increase over the long term.

This alternative would reduce the long term risk of stand replacement fire within the Douglas-fir stands within the GU, and would manage the mountain shrub communities, with an emphasis on regeneration of desired shrub/hardwood species in decadent stands that currently support little or no reproduction. However, approximately 20% fewer forested acres would be thinned or harvested and approximately 1,000 fewer acres would be planned for prescribed fire as compared to Alternative 1. Thus, the risk of a serious stand replacing wild fire would remain high.

All shrub species in the mountain shrub community within the GU tend to respond quickly to burning with vigorous re-sprouting. It is expected that prescribed burning would create ideal conditions for pronounced growth and increased vigor of native mountain shrub species. Treatments would result in decreased wildfire intensities, facilitating more rapid and less costly fire suppression within the treated aspen stands. However, the risk to the untreated Douglas-fir sites of a stand replacement fire would remain.

The primary purpose of the proposed juniper management treatments would be to improve watershed conditions by allowing the natural re-establishment of native bunchgrasses, forbs, and shrubs on sites now dominated by juniper. The lack of fire over the past several decades has allowed juniper to expand from the rocky ridge and outcrop sites where it is protected from fire into other vegetation communities. Many of these sites now have little or no ground cover under the heavy juniper canopy, a condition that would be reversed over time pursuant to the planned juniper treatments.

4.6.2 General Fire Effects

Much of the GU is dominated by granitic sandy soil, which is very susceptible to erosion, and increased risk of soil erosion is a primary concern for all proposed activities. Short term effects of proposed burning prescriptions would include some risk of increased runoff and stream sedimentation, which would diminish dramatically with the re-sprouting or germination of vegetation following the burn.

Implementation of the timber harvests, thinning projects, aspen and mountain shrub treatments and broadcast burns under Alternative 2 would reduce the risk and resource impacts from potential wildfire starts, although not as dramatically as actions envisioned under Alternative 1. Wildland fires in treated areas would be smaller, and suppression actions would be less rigorous and costly. Such fires generally would burn with less intensity due to reduced fuel loadings, and vegetative recovery time would be quicker.

4.6.3 Watersheds and Fisheries

Alternative 2 emphasizes a diversified plan for harvest within the different vegetative types while protecting and restoring natural resources.

Riparian restoration proposed under this alternative would promote pool habitat, increase shade, stabilize streambanks, and reduce sediment production on 19.3 miles of existing stream. Along with Alternatives 4 and 5, this alternative proposes the second highest mileage of stream restoration, which would mitigate potential effects on stream habitat of harvesting. Approximately 28.1 miles of stream identified as needing restoration would not be restored.

This alternative would entail the second highest acreage (371) of mistletoe treatments. These treatments would remove most of the basal area in the stands; the low residual basal area potentially would create hydrologic effects, such as increased sedimentation and changes in peak and base flows, that could impact existing fish habitat.

This alternative proposes 518 acres of harvesting by ground methods, which present the risk of ground disturbance and soil compaction. Of all alternatives, Alternative 2 proposes the second lowest acreage of harvesting by these methods. Ground methodology would be used on 29% of the treated acres, cable on 36%, and helicopter on 35%.

Existing aspen clones along Fox, Hibbard and Sisley Creeks would be protected so as to create, over time, sustainable aspen stand. Shade, streambank stability, and riparian/wetland habitat also would increase over time. Riparian aspen treatments would increase shade, streambank stability, and riparian/wetland habitat over time. Hardwood planting along 30 miles of stream would stabilize streambanks and provide shade to the stream. Seeded areas would be protected until ground cover is well established. Noxious weed treatments along 7.7 streamside miles would help restore native perennial riparian and floodplain vegetation.

It is expected that fish habitat would improve slowly as restoration activities and S&Gs are implemented.

4.6.3.1 Riparian Areas

Buffers in RCAs would protect riparian areas and fish habitat during harvest activities. Riparian health would improve slowly as S&Gs are implemented and restoration is undertaken. Streams and riparian areas not designated for restoration would continue to be degraded. Erosion of bare soil streambanks would result in the widening of the channel, causing the loss of riparian habitat, water table function, and wetland/riparian habitat.

4.6.3.2 Water Quality

Restoration activities would help ease existing water quality problems and prevent additional impacts. Stream temperatures would drop over time, as riparian plantings produce shade. Sedimentation would be reduced as utilization standards are implemented for riparian areas, LWD is placed and riparian plantings are established. Most streams in the AA would stop contributing large quantities sediment to the Burnt, Powder, and Snake Rivers above what naturally would occur.

Under this alternative, 3968 acres would be burned by prescription following harvest, the third highest prescribed fire acreage of any alternative. Because most soils are very erosive and shallow where good vegetative cover is absent, burning would temporarily increase the risk of additional sedimentation to some streams, causing water quality problems.

4.6.3.3 Roads

Of the various alternatives, this alternative would entail closure of the second highest mileage of roads, the construction of the second highest mileage of new roads and the retention of the second highest mileage of open roads. Proposed road closures would remove impacts to fish habitat, riparian areas, and water quality, while new road construction would create such impacts. This alternative also proposes to improve Hibbard, Conner, and Morgan Creek roads, which currently cause sediment-related water quality problems.

4.6.3.4 Cumulative Effects

Planned restorations would help stabilize streams, improve water quality, stabilize sediment, reduce down-cutting and erosion, and increase water table function on 19.3 stream miles. Approximately 28.1 miles of unrestored streams would continue to degrade. While hydrologic processes that impact landowners downstream of BLM-administered land are not all controlled by the BLM, forgoing restoration upstream will contribute to accelerated flows, down-cutting and loss of riparian areas and aquatic vegetation downstream. This alternative would stabilize the second highest mileage of streams in the upper watershed, which also would somewhat improve conditions on downstream private land. These improvements would be particularly effective if private landowners restore streams on their land in conjunction with BLM restoration.

4.6.4 Wildlife

4.6.4.1 Big Game Wildlife

Of the approximately 1193 acres of immature, mature, and old forest Douglas-fir forests in the AA slated for treatment under this alternative, about 180 acres would undergo a mistletoe

Table 15. Alternative 2 Riparian Treatments

Stream	LWD/RIP	RIP ONLY	NXWEED	SEED	LWD/RHCA
Quicksand Creek	1.09 m.	0.81 m.	1.03 m.	1.10 m.	
Canyon Creek	0.52 m.	0.58 m.	0.52 m.	0.52 m.	
Gold Creek	1.09 m				
Sisley Creek	1.31 m.	1.72 m.			1.11 m.
Conner Creek	2.06 m.	2.79 m.	2.42 m.	1.14 m.	
Fox Creek	1.83 m.	0.93 m.	1.14 m.	1.67 m.	1.11 m.
Magpie Gulch	0.47 m.		0.43 m.	0.47 m.	
Douglas Creek	0.99 m.	0.73 m.	0.99 m.		
Hibbard Creek	0.92 m.	0.48 m.	1.00 m.	1.30 m.	1.24 m.
Spring Gulch	1.98 m.	1.97 m.	0.16 m.		
Pole Gulch	2.41 m.	0.74 m.			
Morgan Creek	1.57 m.	1.94 m.			
Daley Creek		0.57 m.			
Boneyard Gulch		0.58 m.			
Totals	**16.2 m.**	**13.8 m.**	**7.69 m.**	**6.2 m.**	**3.46 m.**

prescription aimed at eliminating most of the mistletoe-infected trees in the forest stands. This would result in the reduction of the canopy cover of these stands to less than 10%. Approximately 697 acres would be treated using a thinning or thin-mistletoe prescription, under which canopy cover would be reduced to less than 35%. Approximately 191 acres would be treated using a patch-mistletoe prescription, under which approximately half of the trees in the stands would be removed in 3-5 acre patches, and canopy cover would be reduced to about 50%. Approximately 125 acres of Douglas-fir forest in the Fox Creek drainage would be treated with a thin-mistletoe-aspen treatment, under which the conifer tree canopy cover would be reduced to about 35%. Approximately 869 acres of mountain shrub vegetation would be treated, about 393 acres of which currently have tree canopy cover greater than 40%, providing cover for deer and elk. Approximately 179 acres of aspen would be treated in under this alternative.

The treatments planned for all forested acres in the AA would reduce effective thermal cover by 1116 acres, or approximately 45%. The impact of this reduction would endure for decades, inasmuch as forests in which canopy cover is reduced to below 40% and no replanting is undertaken would not provide effective cover for at least 50 years. This would represent a moderate to high impact on use of the area by elk for thermal cover. On the other hand, because elk and deer use the area primarily during the summer, forage, not thermal cover, is the limiting factor. Further, additional cover would become established in the area, as forests that are not subject to complete canopy removal continue to develop.

Currently, approximately 1049 acres of hiding cover exists in the AA. Under Alternative 2, treatments of forested, mountain shrub, and aspen habitat would reduce the amount of hiding cover for wild ungulates in the AA by approximately 782 acres. This effect would be short-term, however, as shrub vegetation would be expected to redevelop and provide hiding cover within approximately 10 years.

The plan to use prescribed fire on treatment areas following the final harvest entry would present an immediate impact on wildlife due to disturbance associated with fire and fire management activities. Many wildlife species disturbed during prescribed burning would return to the AA within a relatively short period. However, much of the existing grass and shrub vegetation would be burned out from the understory, thereby precluding associated wildlife species from making unlimited use of the area until the shrub and grass communities recover. Approximately 12%, or 147 acres, of grass communities in forested stands in the AA would be burned under this alternative. These communities would be expected to recover within 1-2 years following burning, at which point they would provide higher quality forage for big game species in areas that currently are decadent and lack regeneration. Shrub communities would recover in about 5-10 years, and again would provide hiding cover and foraging habitat for big game and many other wildlife species. Invigorated growth of shrubs and grasses would provide more palatable and nutritious forage for wildlife species, where pre-burn forage was decadent.

Prescribed burns would decrease the amount of forage available for deer and elk on about 1285 acres of grasslands along the Snake River. This impact would be short-term, as native grass seed would be spread over these treated acres. Increased nutritive quality of available grasses after seeding would result in increased use of the area by big game during winter and early spring.

With the conversion of 1193 acres of densely forested habitat to open forest, grass and shrub communities, and the prescribed burning of these communities, there would be an increase in the amount of forage available for deer and elk within approximately 2-5 years, although burned areas would be unusable for wildlife in the immediate future. Because of the exposure of the forest floor to sunlight, native grasses, and soon afterward shrubs, would re-vegetate treated areas and provide forage and hiding cover for deer and elk. Further, the 1990 acres of treatments in mountain shrub, aspen and juniper communities also would provide for forage

for deer and elk within 2-5 years. Burning of these communities would enhance habitat quality for many species. In general, increased quantity and quality of forage would increase the likelihood that elk and deer would move onto public lands, helping to meet the an ODFW objective of moving elk and deer off of private lands and decreasing the amount of agricultural damage caused by these animals. Following prescribed burning, the planting of native bunchgrass species and treatments to control noxious weeds, high quality forage would replace annual grasses such as the prominent medusahead.

Because treated areas would lose there effectiveness as hiding cover, exposure to hunting pressure would increase for deer and elk in the short term. Shrubs would reestablish, however, and begin to provide hiding cover for deer and elk with 5-10 years.

Aspen communities in the AA provide a unique habitat. This habitat currently is threatened. Under Alternative 2, aspen would be released and allowed to regenerate, and it is expected that within approximately 2-5 years these aspen stands would provide additional foraging habitat for big game. Enhancement of these aspen communities also would increase habitat diversity and, consequently, wildlife diversity in the AA.

4.6.4.2 Big Game Wildlife Cumulative Effects

Timber harvesting has occurred on private lands in the Lookout Mountain vicinity, resulting in the conversion of densely forested areas to grass/shrub communities. Additional harvesting is scheduled for other private lands in the area, so that all or most of the private land adjacent to the AA would be converted from closed forest vegetation communities to open forest vegetation communities, shrub lands, and grasslands. Thermal and hiding cover has been all but eliminated on these areas, and deer and elk have been forced to use public lands or other private lands in the general area for these habitat requirements. Because of the timing of the treatments associated with Alternative 2, cumulative effects to big game would be minimal; as stands are allowed to recover from one series of treatments and begin to provide the forage and cover habitat that had been lost, another series of treatments would occur. Therefore, the effects of the treatments would be staggered, and only minor changes to home range and habitat use would be expected. The first series of treatments would occur within 5 to 8 years and the next series of treatments would occur in 10 to 15 years. After approximately 15 years there would be a moderate loss of cover habitat and dense forest habitat throughout the Lookout Mountain Area. Most, if not all, of this forest habitat would never re-establish itself. Periodic underburning and precommercial thinning would prevent fir trees from reestablishing and again developing into a dense forest. This would change the overall wildlife species composition of the area from species that depend upon dense forest habitats to species that rely on open forest habitat for their life history needs. There would, however, be an increase in forage for wild ungulates. With the activities planned to open up the dense forests, grasses and shrubs under the forest canopy would increase and then remain stable for years following the treatments. Periodic underburns and management activities would continue to maintain these vegetation communities, and forage for wild ungulates generally would increase.

4.6.4.3 Special Status Species

Northern Goshawk - Considering the one nesting pair of northern goshawks known to exist in the Sisley Creek sub-watershed, management recommendations would follow Reynolds, et. al. (1992) for habitat modifications and goals within the Post-fledgling Family Area (PFA) and nesting stands.

Treatments proposed under this alternative substantially would modify suitable habitat for the northern goshawk outside of the goshawk management area. Proposed treatments would reduce potential nesting habitat by approximately 1193 acres, leaving approximately 1726 acres of suitable nesting habitat within the AA.

The treatments within the forested stands associated with this alternative would contribute to the development of healthy forests, which is necessary for the provision of future nesting habitat for goshawks. As younger forest stands grow into older stands, they provide nesting and foraging habitat. As such, it is recommended goshawk habitat in and around the nest site include a diversity of age classes and seral stages of forest stands. With approximately 3400 acres (BLM and private) of suitable nesting habitat in the Lookout Mountain vicinity, reduction by 1193 acres would leave approximately 65% nesting habitat. Goshawk habitat management guidelines recommend retention of 60% of young, mature, and old forest habitat, and so treatments under this alternative are within a protective range. Further, within 50-75 years, as stands continue to grow and develop, the quality and quantity of goshawk habitat would increase in these stands. Stands characterized by high levels of mistletoe infestation, however, would deteriorate, and goshawk habitat quality and quantity would decline.

An increase in open areas brought about by forest health treatments would provide habitat for rodents that rely on seed sources and new grass and forb growth for food. These small mammals are the main prey for goshawks. Therefore, the treatments planned for this alternative would increase the prey base for goshawks and potentially increase the health and, minimally, the number of goshawks located in the area.

Sage Grouse - Under this alternative, sage grouse would be impacted by the modification of sagebrush habitat by prescribed fire. Approximately 200 acres of sagebrush habitat would be burned for rangeland improvement purposes, reducing the amount of potential sage grouse habitat in the AA by approximately 2%. This impact would be considered negligible.

Rangeland management through the implementation of Standards and Guides would improve sagebrush habitat within the AA within approximately 10 years. Improvement of the sagebrush communities would provide higher quality habitat for sage grouse and other sagebrush obligate wildlife species. Increased growth of grasses following range burns and more intensive rangeland management would increase potential early brood rearing habitat for sage grouse.

4.6.4.4 Roads

Following treatments, approximately 80.1 miles of open road would exist in the AA under Alternative 2. This equates to approximately 1.35 miles of open road per square mile in the AA, which falls within the 1.5 miles per square mile standard that is used to as a yardstick for minimum habitat effectiveness for big game. Therefore, road miles would have only a minor impact on big game in the area.

Roads impacting riparian habitat essential to wildlife would be decommissioned and rehabilitated, thereby decreasing impacts associated with disturbance from vehicles traveling through the area. Road miles in the area would decrease slightly, and conscientious road siting would minimize impacts to high quality wildlife habitat such as riparian areas. Further, eliminating roads from high wildlife use areas would decrease disturbance to big game during hunting seasons and would effectuate higher quality hiding cover. In all, the expected road-related impacts on wildlife would be low.

4.6.5 Recreation

Alternative 2 has many of the same impacts as Alternative 1 except as noted below. Fewer acres would be treated, and the prescriptions would not be focused on Douglas-fir regeneration; therefore, treatments would not impose upon recreation to the same degree as

Alternative 1. Competing and encroaching conifers would be removed from 526 acres of aspen stands. Enhancement of aspen would have a positive affect on recreation interests, so long as no dispersed campsites within the treatment areas are disturbed. The other timber harvest treatments have similar effects as in Alternative 1 except the patch mistletoe area. The mistletoe patch treatment is designed to mitigate some of the effects of harvesting all of the trees from heavily infested stands by retaining a portion of the tree canopy.

Approximately 6.0 miles of existing road would be decommissioned. These roads are along Sisley, Fox, Daly, and Canyon Creeks, and Magpie Gulch, and also include the Fox/Hibbard Switchback. Closure of the Fox/Hibbard Switchback would eliminate a means of access to Lookout Mountain from the Snake River, but would be replaced by the West Fork Hibbard Road. The Morgan and Conner Creek roads also would continue to provide that access. Closure of these roads, in general, would impact the recreating public somewhat. Impacts from the construction of new permanent and temporary roads would mirror those under Alternative 1. About 7.9 miles of Morgan Creek, West Fork Hibbard Creek and Tent Frames Roads would be improved so as to extend the season of use, grant access to less experienced drivers, and possibly entice more visitors to access the area. Overall, this would have a positive affect on recreationists, particularly because these roads become challenging with very little moisture.

There are at least ten established dispersed campsites within proposed treatment areas. Absent proper buffering, these sites and their users would suffer negative impacts as a result of treatment. These short-term impacts would include decreased privacy, diminished scenery, and diminished water quality.

4.6.6 Visual Resources

KOP #1 - The mistletoe patch treatment is an attempt to compromise between the needs of forest health and visual resources by isolating infected trees while retaining patches to soften visual contrast. As designed, these treatments still would cause a moderate contrast in form, color and texture in the short term. The removal of the solid mass of green would attract attention. The mistletoe patch treatment would be less visually impacting than a mistletoe treatment while achieving forest health goals, but still would not meet Class II objectives.

A shrub/hardwood treatment area is only somewhat visible from KOP #1. As the timber between it and the KOP is harvested, it would become more visible. However, the management emphasis for this treatment would not create a strong contrast or change. It would meet Class II objectives.

The affects of the PFA unit are the same as in Alternative 1.

The effect of the new 1.25 mile permanent road along the ridgeline above Sisley Creek would be the same as under Alternative 1.

KOP #2 - No treatments are prescribed within the foreground of KOP #2. The PFA treatment is visible in the middle ground, and a mountain shrub treatment is visible to the west. Both treatment areas would meet Class II objectives.

The new road on the ridge above Sisley Creek would be visible from KOP #2, and its effect would be the same as under Alternative 1.

KOP #3 - No treatments are prescribed within the foreground of KOP #3. No activity would be visible from the recreation site. The nearest treatment area is designed to favor aspen, and would meet Class II objectives.

KOP #4 - The juniper vegetative treatment visible from KOP #4 would not meet Class II objectives, because juniper skeletons and stumps left on site would draw the casual observers

attention for several years. The color of the stands would be changed from a mottled brown to solid brown with a change in texture, form, and color. A "bald knob" would be created.

KOP #5 - No vegetative treatments would be visible from KOP #5, and therefore Class II objectives will be met.

A permanent new road would be built on the top of the ridge between Fox Creek and Hibbard Creek, and would be visible from this KOP. Absent implementation of mitigation measures, this road construction would not meet Class II objectives.

4.7 Alternative 3

4.7.1 Forests and Woodlands

The immature, mature and PFA treatments would reduce stand basal area to at or below levels recommended by Cochran et al. (1994). The retention of mistletoe-infected trees under the immature and mature treatments would allow infection levels to increase to a degree similar to that under the No Action Alternative. The rate of mistletoe spread may not be as rapid, however, because of the prescribed spacing of trees under Alternative 3.

Most retained old forest stands are heavily infected with mistletoe, and it is expected that approximately 60% of the large old trees in these stands will be weakened by mistletoe and killed by Douglas-fir bark beetles over the next 50 years. This will add to current fuel levels and increase the risk of catastrophic wildfire. Also over the long term, mature stands with trees between 120-150 years old slowly will acquire old forest characteristics. As a result, the location of old forest stands will change over time. Further, maturation of forest stands in combination with harvest of other old stands and loss of some stands to insect attack will cause the location of old forest stands to shift on the landscape.

Douglas-fir would be removed or heavily thinned from 622 (of 827) acres of aspen stands. As a result, it would be expected that the extent and vigor of aspen stands would increase. Replacement of aspen stands by invading conifer would be reversed in the short to mid term, and lower basal area retention in harvested Douglas-fir stands would create open canopy conditions and encourage aspen over time. Further, the long-term decline of most acres of untreated mistletoe-infected Douglas-fir stands would open new sites for aspen growth. Implementation of rangeland standards and guides will improve aspen regeneration and enable aspen stands to develop multi-aged characteristics. Overall, the number of acres characterized as aspen and aspen/mountain shrub habitat type would increase substantially over the mid to long-term - more than under any other alternative.

Favoring aspen over Douglas-fir would enhance the species diversity in the stands. These treatments would open up stands, providing more thorough air movement and decreasing shade, thereby dramatically reducing the risk of a Douglas-fir bark beetle outbreak. Untreated stands would continue to carry a high risk of bark beetle attack.

Over the short to mid-term, the loss of mountain shrub habitat due to conifer encroachment would be reversed. Treatment (including prescribed fire) on 1263 acres of mountain shrub habitat would restore plant vigor and create a mix of age classes. The ongoing process of conifer encroachment, shading, and loss of mountain shrub habitat would continue on 891 acres, although lower basal area retention in harvested Douglas-fir stands would maintain open canopy conditions and encourage sprouting and new establishment of mountain shrub vegetation. Juniper treatment also would increase the number of acres of sites dominated by mountain shrubs. Overall, the number of acres of mountain shrub habitat type would increase substantially over the mid to long-term - more than under any other alternative.

This alternative would most dramatically and aggressively reduce fuel loadings and the risk of stand replacement fire within the GU. Opening up selected Douglas-fir stands and enhancing existing mountain shrub communities would allow for quicker, more effective fire suppression action on most future wildfire starts within treated areas. This would also greatly reduce the chance of a stand replacing wildfire affecting many acres of the Douglas-fir communities.

All shrub species in the mountain shrub community within the GU tend to respond quickly to burning with vigorous re-sprouting. It is expected that prescribed burning would create ideal conditions for pronounced growth and increased vigor of native mountain shrub species.

By reducing fuel loadings, aspen treatments would decrease fire intensities and facilitate rapid and less costly fire suppression within treated stands. However, the risk of stand replacement fire within untreated Douglas-fir sites would remain.

The primary purpose of the proposed juniper management treatments would be to improve watershed conditions by allowing the natural re-establishment of native bunchgrasses, forbs, and shrubs on sites now dominated by juniper. The lack of fire over the past several decades has allowed juniper to expand from the rocky ridge and outcrop sites where it is protected from fire into other vegetation communities. Many of these sites now have little or no ground cover under the heavy juniper canopy, a condition that would be reversed over time pursuant to the planned juniper treatments.

4.7.2 General Fire Effects

Pursuant to the prescribed burning plans envisioned under this alternative, several hundred acres could be either recently blackened or in a recovery stage at any given time. Such visual impacts, however, would be short lived, as shrubs and native bunchgrasses would be expected to reestablish themselves with increased vigor, resulting in the development of healthy, active vegetative communities.

Implementation of the timber harvests, thinning projects, aspen and mountain shrub treatments and broadcast burns under Alternative 3 would reduce the risk and resource impacts from potential wildfire starts. Fires in treated areas would be smaller, and suppression actions would be less rigorous and costly. Such fires generally would burn with less intensity due to reduced fuel loadings, and vegetative recovery time would be quicker. Of all action alternatives, Alternative 3 would most aggressively institute prescribed burning, and in so doing would most dramatically reduce fuel loadings and expand and enhance the mountain shrub community. This alternative also would most effectively restore historic vegetation communities by using fire as an agent of ecosystem management.

Much of the GU is dominated by granitic sandy soil, which is quite susceptible to erosion. Indeed, increased risk of soil erosion is a primary concern for all proposed activities. Short term effects of proposed burning prescriptions would include some risk of increased runoff and stream sedimentation, which would diminish dramatically with the re-sprouting or germination of vegetation following the burn. Leaving up to 5 tons of fine fuels on the ground per acre would mitigate erosion of friable granitic soils and, once decomposed, would improve the tilth and fertility of these relatively sterile soils.

4.7.3 Watersheds and Fisheries

Riparian restoration activities would promote pool habitat, increase shade, stabilize streambanks, and reduce sediment production on 20.6 miles of existing fish habitat. This alternative proposes the highest mileage of restoration, which would mitigate impacts of harvest activities on stream habitat. Approximately 26.8 miles of stream identified as needing restoration would not be restored.

This alternative proposes the highest number of total acres (2509) harvested, although the harvest activities under this alternative present only minimal to mid-level effects on fish habitat and water quality. Because adequate basal area would remain in both mature and immature forest stands following harvest, no hydrologic impacts to fish habitat would be expected.

Ground harvesting methods would be used on 787 acres, or 33% of the treated acres, while cable harvesting and helicopter logging would be done on 17% and 50% of the treated acres, respectively. Of all alternatives, only Alternative 1 would entail the use of ground harvesting methods on more acreage. On the other hand, Alternative 3 also would use helicopter logging on more acres than any other alternative.

Aspen treatments along Fox, Hibbard, and Sisley Creeks would increase shade, streambank stability, and riparian/wetland habitat over time. Riparian aspen treatments would increase shade, streambank stability, and riparian/wetland habitat over time. Hardwood planting along 25.1 miles of stream would stabilize streambanks and provide shade to the stream. Seeded areas would be protected until ground cover is well established. Noxious weed treatments along 0.9 streamside miles would help restore native perennial riparian and floodplain vegetation.

It is expected that fish habitat would slowly improve as Standards and Guides for Range Management (S&Gs) are implemented and restoration activities are undertaken.

4.7.3.1 Riparian Areas

Buffers in RCAs would protect riparian areas and fish habitat during harvest activities. Riparian health would improve slowly as S&Gs are implemented and restoration is undertaken.

Streams and riparian areas not designated for restoration would continue to be degraded. Erosion of bare soil streambanks would result in the widening of the channel, causing the loss of riparian habitat, water table function, and wetland/riparian habitat.

4.7.3.2 Water Quality

This alternative proposes the most mileage of stream habitat restoration of all alternatives, abating existing water quality problems and preventing additional impacts. Stream temperatures would drop over time, as riparian plantings produce shade. Sedimentation would be reduced as utilization standards are implemented for riparian areas, LWD is placed and riparian plantings are established. Most streams in the AA would stop contributing sediment to the Burnt, Powder, and Snake Rivers above what naturally would occur.

Under this alternative, 5031 acres would be burned by prescription following harvest, the highest prescribed fire acreage of any alternative. Because most soils are very erosive and shallow where good vegetative cover is absent, burning would temporarily increase the risk of additional sedimentation to some streams, causing water quality problems.

4.7.3.3 Roads

Of the various alternatives, this alternative would entail closure of the lowest mileage of roads. This alternative proposes to improve Hibbard, Conner, and Morgan Creek roads, which currently cause sediment-related water quality problems. Planned road closures would remove impacts to fish habitat, riparian areas, and water quality.

4.7.3.4 Cumulative Effects

Under this alternative, 20.6 miles of stream would be restored, which is more than any other

alternative. Although the planned restoration will help stabilize streams, improve water quality, stabilize sediment, reduce down-cutting and erosion, and slow down the loss of the water table, this alternative does not provide for the treatment on 26.8 miles of stream needing restoration. Streams with no restoration will continue to undergo a decline in function and condition. While hydrologic processes that impact landowners downstream of BLM-administered land are not all controlled by the BLM, forgoing restoration upstream will contribute to accelerated flows, down-cutting and loss of riparian areas and aquatic vegetation downstream. This alternative does the most of all alternatives to stabilize some of the upper watershed, and thereby possibly help to restore downstream watercourses on private land. On the other hand, under this alternative, not all recommended total stream mileage in the AA would be restored, and only some of the roads that should be closed would indeed be decommissioned.

4.7.4 Wildlife

4.7.4.1 Big Game Wildlife

Approximately 1726 acres of immature, mature, and old forest Douglas-fir forests would be treated under this alternative. Approximately 637 acres would be treated with a "mature" prescription that would attempt to create open stand conditions with large trees in the overstory and a vigorous shrub/hardwood understory. The favoring of aspen over Douglas-fir in upland area mixed stands would result in the reduction of the canopy cover of these stands to less than approximately 10%. Approximately 1089 acres would treated using an "immature" prescription, creating open stand conditions with a vigorous shrub/hardwood understory and reducing canopy cover for these acres to less than 35%.

Approximately 622 acres of forested habitat would be treated with an aspen prescription, under which aspen would be preferred over Douglas-fir and the conifer tree canopy cover would be reduced to approximately 5%. Further, approximately 1263 acres of mountain shrub vegetation would be treated. About 440 acres of these mountain shrub vegetation communities treated in this alternative have tree canopy cover greater than 40%, providing cover for deer and elk.

Table 16. Alternative 3 Riparian Restoration

Stream	LWD/RIP	RIP ONLY	NXWEED	SEED	LWD/RHCA
Quicksand Creek	0.72m.	0.81 m.		0.72 m.	
Canyon Creek	0.52 m.	0.58 m.		0.52 m.	
Gold Creek	0.70 m				
Sisley Creek	1.12 m.			0.77 m.	0.36 m.
Conner Creek	0.27 m.	2.42 m.			
Fox Creek	2.98 m.		0.89 m.	1.71 m.	1.26 m.
Magpie Gulch	0.47 m.			0.47 m.	
Douglas Creek	0.99 m.	0.73 m.			
Hibbard Creek	2.42 m.			1.66 m.	0.90 m.
Spring Gulch	1.98 m.	.		1.98 m.	
Pole Gulch	1.99 m.	0.38 m.		1.76	
Morgan Creek	1.88 m.	3.04 m.		1.57	
Daley Creek					
Boneyard Gulch		0.56 m.			
Totals	**16.2 m.**	**8.86 m.**	**0.89 m.**	**11.16 m.**	**2.52 m.**

The treatments planned for all forested acres would reduce the effective thermal cover in the AA by 1663 acres. Currently, approximately 1057 acres of forest is satisfactory condition thermal cover for wild ungulates and approximately 1445 acres of forest is marginal condition thermal cover. Forest treatments under this alternative would reduce the total amount of effective thermal cover in the AA by approximately 66%. The impact of this reduction would endure for decades, inasmuch as forests in which canopy cover is reduced to below 40% and no replanting is undertaken would not provide effective cover for at least 50 years. This would represent a moderate to high impact on use of the area by elk for thermal cover. On the other hand, because elk and deer use the are primarily during the summer, forage, not thermal cover, is the limiting factor. Further, additional cover would become established in the area, as forests that are not subject to complete canopy removal continue to develop.

Approximately 1049 acres of hiding cover currently exist within the AA. Treatments of forested, mountain shrub, and aspen habitat under this alternative would reduce hiding cover for wild ungulates in the AA by about 839 acres. This effect would be short term, as shrub vegetation would be expected to redevelop to the point where it could provide hiding cover within approximately 10 years.

The plan to use prescribed fire on treatment areas following the final harvest entry would present an immediate impact on wildlife due to disturbance associated with fire and fire management activities. Many wildlife species disturbed during prescribed burning would return to the AA within a relatively short period. However, much of the existing grass and shrub vegetation would be burned out from the understory, thereby precluding associated wildlife species from making unlimited use of the area until the shrub and grass communities recover. Approximately 13%, or 171 acres, of grass communities within forested stands in the AA would be burned under this alternative. These communities would be expected to recover within 1-2 years following burning, at which point they would provide higher quality forage for big game species in areas that currently are decadent and lack regeneration. Shrub communities would recover in about 5-10 years, and again would provide hiding cover and foraging habitat for big game and many other wildlife species. Invigorated growth of shrubs and grasses would provide more palatable and nutritious forage for wildlife species, where pre-burn forage was decadent.

Prescribed burns would decrease the amount of forage available for deer and elk on about 1285 acres of grasslands along the Snake River. This impact would be short-term, as native grass seed would be spread over these treated acres. Increased nutritive quality of available grasses after seeding would result in increased use of the area by big game during winter and early spring.

With the conversion of 1726 acres of densely forested habitat to open forest, grass and shrub communities, and the prescribed burning of these communities, there would be an increase in the amount of forage available for deer and elk within approximately 2-5 years, although burned areas would be unusable for wildlife in the immediate future. Because of the exposure of the forest floor to sunlight, native grasses, and soon afterward shrubs, would re-vegetate treated areas and provide forage and hiding cover for deer and elk. Further, the 2527 acres of treatments in mountain shrub, aspen and juniper communities also would provide for forage for deer and elk within 2-5 years. In general, increased quantity and quality of forage would increase the likelihood that elk and deer would move onto public lands, helping to meet the an ODFW objective of moving elk and deer off of private lands and decreasing the amount of agricultural damage caused by these animals. Following prescribed burning, the planting of native bunchgrass species and treatments to control noxious weeds, high quality forage would replace annual grasses such as the prominent medusahead.

Aspen communities in the AA provide a unique habitat. This habitat currently is threatened. Under Alternative 3, aspen would be released and allowed to regenerate, and it is expected that within approximately 2-5 years these aspen stands would provide additional foraging

habitat for big game. Enhancement of these aspen communities also would increase habitat diversity and, consequently, wildlife diversity in the AA.

Because treated areas would lose there effectiveness as hiding cover, exposure to hunting pressure would increase for deer and elk in the short term. Shrubs would reestablish, however, and begin to provide hiding cover for deer and elk within 5-10 years.

4.7.4.2 Big Game Wildlife Cumulative Effects

Timber harvesting has occurred on private lands in the Lookout Mountain vicinity, resulting in the conversion of densely forested areas to grass/shrub communities. Additional harvesting is scheduled for other private lands in the area, so that all or most of the private land adjacent to the AA would be converted from closed forest vegetation communities to open forest vegetation communities, shrub lands, and grasslands. Thermal and hiding cover has been all but eliminated on these areas, and deer and elk have been forced to use public lands or other private lands in the general area for these habitat requirements. Because of the timing of the treatments associated with Alternative 3, cumulative effects to big game would be minimal; as stands are allowed to recover from one series of treatments and begin to provide the forage and cover habitat that had been lost, another series of treatments would occur. Therefore, the effects of the treatments would be staggered, and only minor changes to home range and habitat use would be expected. The first series of treatments would occur within 5-8 years and the next series of treatments would occur in 10-15 years. After approximately 15 years there would be a moderate loss of cover habitat and dense forest habitat throughout the Lookout Mountain Area. Most, if not all, of this forest habitat would never re-establish itself. Periodic underburning and precommercial thinning would prevent fir trees from reestablishing and again developing into a dense forest. This would change the overall wildlife species composition of the area from species that depend upon dense forest habitats to species that rely on open forest habitat for their life history needs. As dense forests are opened and discouraged from re-establishing, grasses and shrubs under the forest canopy would increase and then remain stable for years following the treatments. Periodic underburns and management activities would continue to maintain these vegetation communities, and forage for wild ungulates generally would increase.

4.7.4.3 Special Status Species

Northern Goshawk - Considering the one nesting pair of northern goshawks known to exist in the Sisley Creek sub-watershed, management recommendations would follow Reynolds, et. al. (1992) for habitat modifications and goals within the Post-fledgling Family Area (PFA) and nesting stands.

Treatments proposed under this alternative substantially would modify suitable habitat for the northern goshawk outside of the goshawk management area. Proposed treatments would reduce potential nesting habitat by approximately 1726 acres, leaving approximately 1193 acres of suitable nesting habitat within the AA.

The treatments within the forested stands associated with this alternative would contribute to the development of healthy forests that are necessary for the provision of future nesting habitat for goshawks. As younger forest stands grow into older stands, they provide nesting and foraging habitat. As such, it is recommended goshawk habitat in and around the nest site include a diversity of age classes and seral stages of forest stands. With approximately 3400 acres (BLM and private) of suitable nesting habitat in the Lookout Mountain vicinity, reduction by 1726 acres would leave approximately 47% nesting habitat. Goshawk habitat management guidelines, on the other hand, recommend retention of 60% of young, mature, and old forest habitat. Nonetheless, within 50-75 years, as stands continue to grow and develop, the quality and quantity of goshawk habitat would increase in these stands.

An increase in open areas brought about by forest health treatments would provide habitat for rodents that rely on seed sources and new grass and forb growth for food. These small mammals are the main prey for goshawks. Therefore, the treatments planned for this alternative would increase the prey base for goshawks and potentially increase the health and, minimally, the number of goshawks located in the area.

Northern Goshawk Cumulative Effects -As forested habitat on private land surrounding the public land is harvested and modified to open forest grassland communities, habitat on public land becomes more critical for the continued nesting and occupancy of goshawks in the area. Treating the public lands in a manner that prevents or minimizes impacts that would occur pursuant to a catastrophic fire event would ensure retention of northern goshawk habitat in the area.

Sage Grouse - Under this alternative, sage grouse would be impacted by the modification of sagebrush habitat by prescribed fire. Approximately 200 acres of sagebrush habitat would be burned for rangeland improvement purposes, reducing the amount of potential sage grouse habitat in the AA by approximately 2%. This impact would be considered negligible.

Rangeland management through the implementation of Standards and Guides would improve sagebrush habitat within the AA within approximately 10 years. Improvement of the sagebrush communities would provide higher quality habitat for sage grouse and other sagebrush obligate wildlife species. Increased growth of grasses following range burns and more intensive rangeland management would increase potential early brood rearing habitat for sage grouse.

4.7.4.4 Roads

Following treatments, approximately 82.4 miles of open road would exist in the AA under Alternative 3. This equates to approximately 1.4 miles of open road per square mile in the AA, which falls within the 1.5 miles per square mile standard that is used to as a yardstick for minimum habitat effectiveness for big game. Therefore, road miles would have only a minor impact on big game in the area.

Roads impacting riparian habitat essential to wildlife would be decommissioned and rehabilitated, thereby decreasing impacts associated with disturbance from vehicles traveling through the area. Although road miles in the area would increase slightly, conscientious road siting would minimize impacts to high quality wildlife habitat such as riparian areas. Further, eliminating roads from high wildlife use areas would decrease disturbance to big game during hunting seasons and would effectuate higher quality hiding cover. In all, the expected road-related impacts on wildlife would be low.

4.7.5 Recreation

Under this alternative, treatments that involve felling trees and leaving them on site will cause impacts to recreation. If too many are left, foot travel will be impeded, thereby impacting hunters and others trying to gain passage through treated stands. The reintroduction of fire into the stand will have relatively short-term impacts on recreation. Scorching of trees and burned vegetation generally detracts from recreation values. The increased growth of shrubs and other ground vegetation that would result from prescribed burning and other treatments may have negative impacts on some recreators by impeding cross-country travel and changing current hunting experiences.

Effects from aspen treatments will be very similar to Alternative 2.

The mature and immature treatments in Douglas-fir stands will have negative short-term affects. Even though the objective is to create open stand conditions with large trees in the overstory, harvest and thinning activities will create the negative impacts as described above on 1726 acres of the most popular forested areas on Lookout Mountain. These impacts would be most severe in terms of aesthetics and foot travel.

The effects from proposed road management would be the same as under Alternative 1.

4.7.6 Visual Resources

KOP #1 - The shrub/hardwood treatment area is identical to that in Alternative 1, and, likewise, would meet Class II objectives. A prescribed fire unit would be visible to the south, but the visual effects of same would be short term and would ultimately result in high quality visual resources in that area.

The mature and immature Douglas fir treatments would reduce basal area to 60-100 sq. ft. on almost 1726 acres, changing the color and texture of the stands, and therefore would not meet Class II objectives.

The temporary road south of Sisley Creek may meet Class II if vegetative screening is retained.

KOP #2 - The proposed activities would affect the viewshed in the middle and fore grounds. The "immature" treatments would change a dense green hillside into an open stand. The contrast would be strong in form, color and texture, and hence would not meet Class II objectives.

KOP #3 - "Mature" treatment areas would impact visual resources around Bassar Diggins. The treatment would create open stand conditions with large trees in the overstory and a vigorous shrub/hardwood understory, resulting in a strong contrast in form and color. This treatment would dominate the view of recreators and therefore not meet Class II objectives. While the stands eventually would respond to treatment and develop high quality visual characteristics, the healing duration would be lengthy and unacceptable.

KOP #4 - The juniper vegetative treatment visible from KOP #4 would not meet Class III objectives, because juniper skeletons left on site would draw the casual observers attention for several years. Mitigation measures would enable management to meet Class III objectives.

KOP #5 - The "immature" treatments in the foreground of this KOP would change a rather dense green stand into an open stand. The contrast would be strong in line, color and texture, and hence would not meet Class II objectives, particularly inasmuch as the treatments would dominate the view of the casual observer in the long term.

A permanent new road would be built on the top of the ridge between Fox Creek and Hibbard Creek, and would be visible from this KOP. Absent implementation of mitigation measures, this road construction would not meet Class II objectives.

4.8 Effects of Alternative 4

4.8.1 Forests and Woodlands

Thinning treatments would open up stands and provide better air movement and light, thereby reducing the risk of a Douglas-fir bark beetle outbreak. Untreated stands would continue to carry a high risk of bark beetle attack. The satisfactory cover and marginal cover treatments would remove very little of the existing basal area and have very little effect on reducing the risk of bark beetle attack.

Since the level of mistletoe infestation would not be a consideration in stand treatment, none of the timber harvest activities undertaken under Alternative 4 would have an impact on mistletoe infection levels. There would be little change from the no action alternative. As a corollary, this alternative likely would not reduce fuel loadings appreciably. Further, management of mistletoe and bark beetles would not be a priority under this alternative. As a consequence, large tree mortality and resultant increased fuel loadings would persist over time in most untreated stands, thereby increasing the susceptibility of forested areas to stand replacement wildfire. Under these conditions, any wildfire start would be expected to require a tremendous commitment of firefighting resources, and the chances of early fire containment would be poor.

Only 12% of old forests in the GU would be treated, with little or no effect on old forest characteristics. Untreated old forest would retain old forest characteristics over the short term. Most of these retained old forest stands have heavy mistletoe infection levels. Over the next 50 years, approximately 60% of the large old trees in these stands will be weakened by mistletoe and killed by bark beetles, adding to already high fuel levels and increasing the risk of catastrophic wildfire. Also over the long term, mature stands that have trees between 120-150 years old will slowly acquire old forest characteristics. The result of this is in the long term the location of old forest stands will change over time.

Over the short to mid-term, the rate of loss of mountain shrub habitat due to conifer encroachment would be reduced. Treatment (including prescribed fire) of 342 acres of mountain shrub habitat would restore plant vigor and create a mix of age classes, particularly considering that all of the shrub species in this habitat tend to respond quickly with vigorous re-sprouting after burning. On the other hand, the ongoing process of conifer encroachment, shading, and loss of mountain shrub habitat would continue on 1812 acres. While the limited harvest of Douglas-fir stands would provide less opportunity for short-term increase in mountain shrub habitat type, the long-term decline of untreated mistletoe-infected Douglas-fir stands would open new sites for mountain shrub growth. Overall, the number of acres of mountain shrub habitat type would increase over the long-term.

Douglas-fir would be removed or heavily thinned from 539 acres (of 827) of aspen habitat, the net result of which should be that the extent and vigor of aspen stands would increase. Replacement of aspen stands by invading conifer would be slowed in the short term, although limited harvest of Douglas-fir stands would provide less opportunity for a short-term increase in aspen habitat type. However, long-term decline of most untreated mistletoe-infected Douglas-fir stands would open new sites for aspen growth. Implementation of rangeland standards and guides will improve aspen regeneration and enable aspen stands to develop multi-aged characteristics. Overall, number of acres of aspen and aspen/mountain shrub habitat type would increase over the long-term.

Aside from providing benefits for wildlife, aspen treatments under Alternative 4 would reduce the elevated wildfire risk inherent in this alternative's plan to treat fewer acres of forested land. These aspen treatments also would reduce fuel loadings, thereby decreasing wildfire intensities and facilitating rapid and less costly fire suppression within treated stands. However, the high risk of stand replacement fire within untreated Douglas-fir stands would remain.

The primary purpose of the proposed juniper management treatments would be to improve watershed conditions by allowing the natural re-establishment of native bunchgrasses, forbs, and shrubs on sites now dominated by juniper. The lack of fire over the past several decades has allowed juniper to expand from the rocky ridge and outcrop sites where it is protected from fire into other vegetation communities. Many of these sites now have little or no ground cover under the heavy juniper canopy, a condition that would be reversed over time pursuant to the planned juniper treatments. The treatments also would increase the diversity of the area

in terms of wildlife habitat, and would increase forage production for wildlife and livestock. Juniper treatment also would increase the acreage of mountain shrub-dominated sites by lowering the number of juniper trees in the GU and, thereby, facilitating the growth of shrubs.

4.8.2 General Fire Effects

Implementation of limited timber harvests, forest health projects, aspen and mountain shrub treatments and broadcast burns under Alternative 4 would reduce the risk and resource impacts from potential wildfire starts. Fires in treated areas would be smaller, and suppression actions would be less rigorous and costly. Such fires generally would burn with less intensity due to reduced fuel loadings, and vegetative recovery time would be quicker. The reduction of risk and potential effects from wildfire would not be nearly as dramatic as would be expected under the other action alternatives, because fewer acres of important vegetation/fuel types would be treated pursuant to Alternative 4.

Much of the GU is dominated by granitic sandy soil, which is quite susceptible to erosion. Indeed, increased risk of soil erosion is a primary concern for all proposed activities. Short term effects of proposed burning prescriptions would include some risk of increased runoff and stream sedimentation, which would diminish dramatically with the re-sprouting or germination of vegetation following the burn.

4.8.3 Watersheds and Fisheries

Riparian restoration activities would promote pool habitat, increase shade, stabilize streambanks, and reduce sediment production on 19.3 miles of stream. Along with Alternatives 2 and 5, this alternative proposes the second highest mileage of restoration, which would mitigate impacts of harvest activities on stream habitat.

This alternative proposes the lowest number of total acres (773) of Douglas-fir harvesting, and presents the smallest risk of creating additional impacts to fish habitat. Indeed, all treatments associated with this alternative would have minimal to mid-level effects on fish habitat and water quality. Because adequate basal area would remain in both mature and immature forest stands following harvest, minimal hydrologic impacts to fish habitat, limited to potentially slightly increased sedimentation, may occur.

Ground harvesting methods would be used on 132 acres, or 20% of the treated acres, while cable harvesting and helicopter logging would be done on 35% and 45% of the treated acres, respectively. Of all alternatives, Alternative 4 would use ground and helicopter harvesting methods on the least acreage.

Riparian aspen treatments would increase shade, streambank stability, and riparian/wetland habitat over time. Hardwood planting along 30 miles of stream would stabilize streambanks and provide shade to the stream. Seeded areas would be protected until ground cover is well established. Noxious weed treatments along 7.7 streamside miles would help restore native perennial riparian and floodplain vegetation.

It is expected that fish habitat would slowly improve as Standards and Guides for Range Management (S&Gs) are implemented and restoration activities are undertaken.

4.8.3.1 Riparian Areas

Buffers in RCAs would protect riparian areas and fish habitat during harvest activities. Riparian health would improve slowly as S&Gs are implemented and restoration is undertaken.

Streams and riparian areas not designated for restoration would continue to be degraded. Erosion of bare soil streambanks would result in the widening of the channel, causing the loss of riparian habitat, water table function, and wetland/riparian habitat.

4.8.3.2 Water Quality

Stream restoration under this alternative would help to abate existing water quality problems and prevent additional impacts. Stream temperatures would drop over time, as riparian plantings produce shade. Sedimentation would be reduced as utilization standards are implemented for riparian areas, LWD is placed and riparian plantings are established. Most streams in the AA would stop contributing sediment to the Burnt, Powder, and Snake Rivers above what naturally would occur.

Under this alternative, 2542 acres would be burned by prescription following harvest, the lowest prescribed fire acreage of any alternative. Because most soils are very erosive and shallow where good vegetative cover is absent, burning would temporarily increase the risk of additional sedimentation to some streams, causing water quality problems.

4.8.3.3 Roads

Of the various alternatives, this alternative would entail closure of the highest mileage of roads. These closures would remove impacts to fish habitat, riparian areas, and water quality. On the other hand, this alternative does not address the continuing need for transportation in the AA or water quality problems currently created by the Fox Creek road.

4.8.3.4 Cumulative Effects

Actions under this alternative would restore 19.3 miles of stream, the second highest number of miles of all action alternatives. The planned restoration would stabilize streams, improve water quality, stabilize sediment, reduce down-cutting and erosion, and improve water table function. While hydrologic processes that impact landowners downstream of BLM-administered land are not all controlled by the BLM, forgoing restoration upstream will contribute to accelerated flows, down-cutting and loss of riparian areas and aquatic vegetation

Table 17. Alternative 4 Riparian Treatments

STREAM	LWD/RIP	RIP ONLY	NXWEED	SEED	LWD/RHCA
Quicksand Creek	1.09 m.	0.81 m.	1.03 m.	1.10 m.	
Canyon Creek	0.52 m.	0.58 m.	0.52 m.	0.52 m.	
Gold Creek	1.09 m				
Sisley Creek	1.31 m.	1.72 m.			1.11 m.
Conner Creek	2.06 m.	2.79 m.	2.42 m.	1.14 m.	
Fox Creek	1.83 m.	0.93 m.	1.14 m.	1.67 m.	1.11 m.
Magpie Gulch	0.47 m.		0.43 m.	0.47 m.	
Douglas Creek	0.99 m.	0.73 m.	0.99 m.		
Hibbard Creek	0.92 m.	0.48 m.	1.00 m.	1.30 m.	1.24 m.
Spring Gulch	1.98 m.	1.97 m.	0.16 m.		
Pole Gulch	2.41 m.	0.74 m.			
Morgan Creek	1.57 m.	1.94 m.			
Daley Creek		0.57 m.			
Boneyard Gulch		0.58 m.			
Totals	**16.2 m.**	**13.8 m.**	**7.69 m.**	**6.2 m.**	**3.46 m.**

downstream. Restoration activities under Alternative 4 stabilize some streams in the upper watershed, which would help to restore stream habitat on private land, particularly if the private landowners undertake stream restoration concurrently with BLM treatments. Of all the action alternatives, this alternative close the highest mileage of roads (10.7miles) currently causing water quality problems.

4.8.4 Wildlife

4.8.4.1 Big Game Wildlife

Approximately 427 acres of immature, mature, and old forest Douglas-fir forests would be treated under this alternative. Stands totaling approximately 104 acres would be treated with a "satisfactory" prescription, that would reduce canopy cover in these stands to no less than 70%. Approximately 169 acres treated with a "marginal" prescription, reducing canopy cover in these stands to no less than 40%. Approximately 154 acres of isolated forested stands that do not meet effective big game thermal cover criteria would be treated with an "isolated" prescription, that would reduce basal area to 100-120 ft per acre. Approximately 191 acres of forested habitat would be treated with an "aspen" prescription, under which aspen is preferred over Douglas-fir. Conifer tree canopy cover in these stands would be reduced to approximately 5%. Approximately 342 acres of mountain shrub vegetation would be treated, of which about 35 acres bear tree canopy cover greater than 40%, providing cover for deer and elk.

Under Alternative 4, no treatments planned for forested acres in the AA would reduce effective thermal cover. Further, no treatments would impact hiding cover along any open roads in the AA.

The plan to use prescribed fire on treatment areas following the final harvest entry would present an immediate impact on wildlife due to disturbance associated with fire and fire management activities. Many wildlife species disturbed during prescribed burning would return to the AA within a relatively short period. However, much of the existing grass and shrub vegetation would be burned out from the understory, thereby precluding associated wildlife species from making unlimited use of the area until the shrub and grass communities recover. Shrub communities would recover in about 5-10 years, and again would provide hiding cover and foraging habitat for big game and many other wildlife species. Invigorated growth of shrubs and grasses would provide more palatable and nutritious forage for wildlife species, where pre-burn forage was decadent.

Prescribed burns would decrease the amount of forage available for deer and elk on about 1285 acres of grasslands along the Snake River. This impact would be short-term, as native grass seed would be spread over these treated acres. Increased nutritive quality of available grasses after seeding would result in increased use of the area by big game during winter and early spring.

With the reduction of canopy cover on 427 acres of densely forested habitat, the amount of forage available for deer and elk would increase within approximately 2-5 years, although burned areas would be unusable for wildlife in the immediate future. Because of the exposure of the forest floor to sunlight, native grasses, and soon afterward shrubs, would re-vegetate treated areas and provide forage and hiding cover for deer and elk. However, because of the minimalist nature of vegetative treatments under this alternative, forest and shrub response would be minor compared to other alternatives. The treatment, particularly prescribed burning, of 1471 acres of mountain shrub, aspen and juniper communities also would provide for forage for deer and elk within 2-5 years. Further, prescribed fire in grassland areas along the Snake River would increase the quality and quantity of forage available for bighorn sheep, deer, and elk. Following prescribed burning, the planting of native bunchgrass species and treatments to control noxious weeds, high quality forage would replace annual grasses such as the prominent medusahead.

Aspen communities in the AA provide a unique habitat. This habitat currently is threatened. Under Alternative 4, aspen would be released and allowed to regenerate, and it is expected that within approximately 2-5 years these aspen stands would provide additional foraging habitat for big game. Enhancement of these aspen communities also would increase habitat diversity and, consequently, wildlife diversity in the AA.

Because treated areas would lose there effectiveness as hiding cover, exposure to hunting pressure would increase for deer and elk in the short term. Shrubs would reestablish, however, and begin to provide hiding cover for deer and elk within 5-10 years. Since hiding cover would be retained along all open roads under this alternative, the impact to hiding cover within treated areas would be negligible.

4.8.4.2 Big Game Wildlife Cumulative Effects

Timber harvesting has occurred on private lands in the Lookout Mountain vicinity, resulting in the conversion of densely forested areas to grass/shrub communities. Additional harvesting is scheduled for other private lands in the area, so that all or most of the private land adjacent to the AA would be converted from closed forest vegetation communities to open forest vegetation communities, shrub lands, and grasslands. Thermal and hiding cover has been all but eliminated on these areas, and deer and elk have been forced to use public lands or other private lands in the general area for these habitat requirements. Retention of thermal cover under Alternative 4 would result in increased use of public land by big game. As dense forests are opened and discouraged from re-establishing, grasses and shrubs under the forest canopy would increase and then remain stable for years following the treatments. There would be an slight overall increase in forage for wild ungulates. This increase in forage would be minimal, and use of public lands by big game for foraging would not be realized; use would continue on private lands.

Because this alternative does not address the management of mistletoe in Douglas-fir stands, the potential for the deterioration of habitat quality in these stands will remain high. Such deterioration of dense forest habitat would result in decreased numbers of wildlife species that rely on this habitat type for many of their life history needs. However, there would be an increase in cavity nesting wildlife species and species that rely on open forest grassland habitat. With forest stands decaying and trees falling, sunlight would reach the forest floor and, in the long term, would increase the amount of forage available to big game wildlife species in the AA.

4.8.4.3 Special Status Species

Northern Goshawk - Considering the one nesting pair of northern goshawks known to exist in the Sisley Creek sub-watershed, management recommendations would follow Reynolds, et. al. (1992) for habitat modifications and goals within the Post-fledgling Family Area (PFA) and nesting stands.

Treatments proposed under this alternative substantially would modify suitable habitat for the northern goshawk outside of the goshawk management area. Proposed treatments would reduce potential nesting habitat by approximately 323 acres, leaving approximately 2651 acres of suitable nesting habitat within the AA.

The treatments within the forested stands associated with this alternative would contribute to the development of healthy forests that are necessary for the provision of future nesting habitat for goshawks. As younger forest stands grow into older stands, they provide nesting and foraging habitat. As such, it is recommended goshawk habitat in and around the nest site include a diversity of age classes and seral stages of forest stands. With approximately 3400 acres (BLM and private) of suitable nesting habitat in the Lookout Mountain vicinity, reduction by 323 acres

would leave approximately 91% nesting habitat, which is well within the goshawk habitat management guidelines recommendation for retention of 60% of young, mature, and old forest habitat. Impacts on northern goshawk nesting habitat would be negligible.

A small increase in open areas brought about by forest health treatments would provide habitat for rodents that rely on seed sources and new grass and forb growth for food. These small mammals are the main prey for goshawks. Therefore, the treatments planned for this alternative would result in a slight increase of the goshawk prey base. This increase is expected to be relatively minor, however, and would not increase the number or health of goshawks in the area, outside of the PFA.

Sage Grouse - No planned burns or modifications of sagebrush habitat are planned under this alternative, although burning would be conducted in annual cheatgrass and medusahead areas for rangeland health improvement. These areas are not considered sage grouse habitat. The planting of shrubs following the burns, however, potentially would increase the amount of sage grouse habitat. This habitat along the river would be usable mainly during winter because of the low percentage of sagebrush cover and climatic conditions that impact the length of time grasses remain green in the area.

4.8.4.4 Roads

Following treatments, approximately 72.4 miles of open road would exist in the AA under Alternative 4. This equates to approximately 1.2 miles of open road per square mile in the AA, which falls within the 1.5 miles per square mile standard that is used to as a yardstick for minimum habitat effectiveness for big game. Therefore, road miles would have only a minor impact on big game in the area.

Roads impacting riparian habitat essential to wildlife and many spur and lightly used roads would be decommissioned and rehabilitated, thereby decreasing impacts associated with disturbance from vehicles traveling through the area. Road miles in the area would decrease moderately, and conscientious road siting would minimize impacts to high quality wildlife habitat such as riparian areas. Further, eliminating roads from high wildlife use areas would decrease disturbance to big game during hunting seasons and would effectuate higher quality hiding cover. In all, the expected road-related impacts on wildlife would be very low.

4.8.5 Recreation

Because this alternative minimizes commercial harvest, it is most compatible with recreation interests. Enhancing big game habitat correlates with an enhanced hunting experience. Maintaining and enhancing the existing aspen component responds to the needs and desires of other recreation pursuits.

The treatment prescriptions involve retention of the biggest trees and the creation of canopy cover most desired by recreationists. In the short term, slash and prescribed burning will have a negative effect but it is expected that long-term positive effects would outweigh any temporal detriment.

No closed roads would be temporarily opened. Thus, the public would not develop an expectation of use, and these roads would continue to devolve naturally. The greatest negative impact on the recreation resource would be the decommissioning of 13.6 miles of existing roads, including most of the side roads off of the Lookout Mountain road. This would be of concern to many users who rely upon these roads for access. Further, the only road slated for improvement is 3.2 miles of Tent Frames Road. Access would continue to be dictated largely by weather conditions and type of vehicle. Moreover, with increasing

pressure from hunting-related OHV use, it will be very difficult to close roads effectively and permanently. On the other hand, the reduction of road miles would have a positive impact on hunting quality, and would provide more opportunities for primitive setting experiences. Closure of the road above Bassar Diggins campground would create a positive effect, since traffic on this road creates dust and degrades the campsite setting, thereby interfering with users' enjoyment of the site.

4.8.6 Visual Resources

KOP #1 - Mountain shrub treatments visible from this KOP would emphasize maintenance and/or enhancement of the mountain shrub/hardwood plant community through the use of prescribed fire. These treatments would meet Class II objectives.

An aspen treatment area also would be visible from this KOP. Currently, this stand appears to be almost solid green from this KOP. Removal of conifers from the stand would create a strong visual contrast in color, texture and form. Stumps would be created. The treatment would not meet Class II objectives.

The effects of the PFA unit would be the same as in Alternative I. However, the contrast would be reduced from strong to moderate because harvest levels would be diminished, effects would be visible but not dominant, and therefore this treatment would satisfy Class II objectives.

KOP #2 - "Marginal treatments" in the foreground as viewed from this KOP would create only moderate to weak visual contrast in the long terms, and therefore this treatment would meet Class II objectives.

KOP #3 - No treatments are prescribed within the visual zone of Bassar Diggins. The road accessing the recreation site would be maintained but the roads extending beyond the site would be closed. This would have a positive affect on the visual resource and would meet Class II objectives.

KOP #4 - The juniper vegetative treatment visible from KOP #4 would not meet Class II objectives, because juniper skeletons and stumps left on site would draw the casual observers attention for several years. The color of the stands would be changed from mottled brown to solid brown with a change in texture, form, and color. A "bald knob" would be created.

KOP #5 - The "isolated tract" treatment visible in the foreground of this KOP would create a moderate contrast in color and texture, and would not meet Class II objectives.

4.9 Effects of Alternative 5

4.9.1 Forests and Woodlands

Thinnings would open up stands and provide better air movement and light, thereby reducing the risk of a Douglas-fir bark beetle outbreak. Untreated stands would continue to carry a high risk of bark beetle attack.

Mistletoe levels would remain high in untreated mature and old forest stands. Stressed trees eventually would be attacked by Douglas-fir bark beetles and die, thereby increasing fuel loads and contributing to the risk of a catastrophic stand replacement fire. Indeed, more Douglas-fir stands would remain at risk of such wildfires than under the other action alternatives. Effects from management actions in this alternative generally would be similar to those for Alternative 2.

Untreated stands would retain high basal area and canopy cover.

The mistletoe treatments would effectively remove mistletoe from stands with currently high mistletoe levels. No infected trees would be retained in treated areas, except in pockets. Buffers around these pockets of retained infected trees would prevent the spread of mistletoe into new stands. Untreated mature and old forest stands would continue to have high mistletoe infection levels. Heavily infected trees would continue to be stressed and eventually would be killed by bark beetles.

No timber harvesting would be undertaken in old forest areas, and hence, in the short term, old forest conditions would not change. However, most of the existing old forest stands are heavily infected with mistletoe, and over the next 50 years approximately 60% of the large old trees in these stands will be weakened by mistletoe and killed by bark beetles. This will add to the fuel levels and increase the risk of catastrophic wildfire. On the other hand, over the long term, mature stands that have trees between 120-150 years old slowly will acquire old forest characteristics. As a result, the location of old forest stands will change over time.

Over the short to mid-term, loss of mountain shrub habitat due to conifer encroachment would be reduced, and treatment (including prescribed fire) on 725 acres of mountain shrub habitat would restore plant vigor and create a mix of age classes. The ongoing process of conifer encroachment, shading, and loss of mountain shrub habitat would continue on 1429 acres. Juniper treatments on old mountain shrub sites would increase the acreage of sites dominated by mountain shrubs, and the level of basal area retention in Douglas-fir stands slated for harvest effectively would encourage sprouting and new establishment of mountain shrub vegetation on 174 acres. Further, the long-term decline of untreated mistletoe-infected Douglas-fir stands would open new sites for mountain shrub establishment. Overall, the number of acres of mountain shrub habitat type would increase in the short to mid-term.

Pursuant to thinning treatments, Douglas-fir would be favored over aspen in Douglas-fir stands, although the density of retention trees and remaining canopy in Douglas-fir stands effectively would encourage aspen sprouting and new establishment of aspen on 174 acres. Douglas-fir would be removed or heavily thinned on 438 acres (of 827) of aspen habitat, the net result of which would be an increase in the extent and vigor of aspen stands over the short term. Replacement of aspen stands by invading conifers would be slowed in the short to mid-term. Implementation of rangeland standards and guides will improve aspen regeneration and enable aspen stands to develop multi-aged characteristics, and the long-term decline of untreated mistletoe-infected Douglas-fir stands would open new sites for aspen growth. Overall, the number of acres of aspen and aspen/mountain shrub habitat type would increase over time.

These treatments also would reduce the threat of wildfire in aspen stands, while reintroducing fire by prescription as an agent of ecosystem maintenance. It is expected that, following treatment, any wildfire start would be of low intensity. As a result, fire suppression within treated stands would be more rapid and less costly.

The primary purpose of the proposed juniper management treatments would be to improve watershed conditions by allowing the natural re-establishment of native bunchgrasses, forbs, and shrubs on sites now dominated by juniper. The lack of fire over the past several decades has allowed juniper to expand from the rocky ridge and outcrop sites where it is protected from fire into other vegetation communities. Many of these sites now have little or no ground cover under the heavy juniper canopy, a condition that would be reversed over time pursuant to the planned juniper treatments. The treatments also would increase the diversity of the area in terms of wildlife habitat, and would increase forage production for wildlife and livestock. Juniper treatment also would increase the acreage of mountain shrub-dominated sites by lowering the number of juniper trees in the GU and, thereby, facilitating the growth of shrubs.

4.9.2 General Fire Effects

Implementation of limited timber harvests, forest health projects, aspen and mountain shrub treatments and broadcast burns under Alternative 5 would reduce the risk and resource impacts from potential wildfire starts. Fires in treated areas would be smaller, and suppression actions would be less rigorous and costly. Such fires generally would burn with less intensity due to reduced fuel loadings, and vegetative recovery time would be quicker. The reduction of risk and potential effects from wildfire would not be as dramatic as would be expected under Alternatives 1, 2 and 3, because anywhere from 592-1731 fewer acres of important vegetation/fuel types would not be treated pursuant to Alternative 5.

Much of the GU is dominated by granitic sandy soil, which is quite susceptible to erosion. Indeed, increased risk of soil erosion is a primary concern for all proposed activities. Short term effects of proposed burning prescriptions would include some risk of increased runoff and stream sedimentation, which would diminish dramatically with the re-sprouting or germination of vegetation following the burn.

4.9.3 Watersheds and Fisheries

Riparian restoration activities would promote pool habitat, increase shade, stabilize streambanks, and reduce sediment production on 19.3 miles of stream. Along with Alternatives 2 and 4, this alternative proposes the second highest mileage of restoration, which would mitigate impacts of harvest activities on stream habitat. Approximately 28.1 miles of stream identified as needing restoration would not be restored, and would continue to degrade.

This alternative proposes the lowest number of acres (149) of mistletoe treatments, but presents the risk of creating additional harvest-related impacts to fish habitat. The mistletoe treatments would remove most of the basal area in infected stands, potentially resulting in hydrologic impacts, such as increased sedimentation and changes in peak and base flows, to existing fish habitat.

Ground harvesting methods would be used on 578 acres, or 42% of the treated acres, while cable harvesting and helicopter logging would be done on 27% and 31% of the treated acres, respectively. Of all alternatives, Alternative 5 would entail the use of ground harvesting methods on the middle amount of acreage.

Riparian aspen treatments along 3.5 miles of stream would enhance shade, streambank stability, and riparian/wetland habitat over time. Hardwood planting along 30 miles of stream would stabilize streambanks and provide shade to the stream. Noxious weed treatments along 7.7 stream miles would help restore native perennial riparian and floodplain vegetation. Seeded areas would be protected until ground cover is well established.

It is expected that fish habitat would slowly improve as Standards and Guides for Range Management (S&Gs) are implemented and restoration activities are undertaken.

4.9.3.1 Riparian Areas

Improvement is expected to occur slowly in riparian areas as S&Gs are implemented and restoration activities take place.

Streams and riparian areas not designated for restoration would continue to erode. Erosion of bare soil streambanks would result in the widening of the channel, causing the loss of riparian habitat, water table function, and wetland/riparian habitat.

4.9.3.2 Water Quality

Along with Alternatives 2 and 4, this alternative proposes the second most stream habitat restoration, substantially abating existing water quality problems and preventing additional impacts. Stream temperatures would drop over time, as riparian plantings produce shade. Sedimentation would be reduced as utilization standards are implemented for riparian areas, LWD is placed and riparian plantings are established. Most streams in the AA would stop contributing sediment to the Burnt, Powder, and Snake Rivers above what naturally would occur.

Under this alternative, 3471 acres would be burned by prescription following harvest, the second lowest prescribed fire acreage of any alternative. Because most soils are very erosive and shallow where good vegetative cover is absent, burning would temporarily increase the risk of additional sedimentation to some streams, causing water quality problems.

4.9.3.3 Roads

Of the various alternatives, this alternative would entail closure of the second highest number of miles of roads. These closures would remove impacts to fish habitat, riparian areas, and water quality.

4.9.3.4 Cumulative Effects

This alternative would restore 19.3 miles of stream, the second highest number of miles of all action alternatives. The planned restoration would stabilize streams, improve water quality, stabilize sediment, reduce down-cutting and erosion, and improve water table function. While hydrologic processes that impact landowners downstream of BLM-administered land are not all controlled by the BLM, forgoing restoration upstream will contribute to accelerated flows, down-cutting and loss of riparian areas and aquatic vegetation downstream. Actions under Alternative 5 would stabilize some streams in the upper watershed, which would help to restore stream habitat on private land, particularly if the private landowners engage in stream restoration on their land in conjunction with BLM restoration activities.

Table 18. Alternative 5 Riparian Treatments

STREAM	LWD/RIP	RIP ONLY	NXWEED	SEED	LWD/RHCA
Quicksand Creek	1.09 m.	0.81 m.	1.03 m.	1.10 m.	
Canyon Creek	0.52 m.	0.58 m.	0.52 m.	0.52 m.	
Gold Creek	1.09 m				
Sisley Creek	1.31 m.	1.72 m.			1.11 m.
Conner Creek	2.06 m.	2.79 m.	2.42 m.	1.14 m.	
Fox Creek	1.83 m.	0.93 m.	1.14 m.	1.67 m.	1.11 m.
Magpie Gulch	0.47 m.		0.43 m.	0.47 m.	
Douglas Creek	0.99 m.	0.73 m.	0.99 m.		
Hibbard Creek	0.92 m.	0.48 m.	1.00 m.	1.30 m.	1.24 m.
Spring Gulch	1.98 m.	1.97 m.	0.16 m.		
Pole Gulch	2.41 m.	0.74 m.			
Morgan Creek	1.57 m.	1.94 m.			
Daley Creek		0.57 m.			
Boneyard Gulch		0.58 m.			
Totals	**16.2 m.**	**13.8 m.**	**7.69 m.**	**6.2 m.**	**3.46 m.**

4.9.4 Wildlife

4.9.4.1 Big Game and Big Game Habitat

Approximately 914 acres of immature and mature Douglas-fir forests would be treated under this alternative. Approximately 14 acres would be treated with a mistletoe prescription that would attempt to eliminate most of the mistletoe infected trees in the forest stands. This would reduce canopy cover of these stands to less than approximately 10%. Approximately 673 acres would be treated using a thinning prescription or thin-mistletoe prescription, reducing canopy cover for these acres to less than 35%. About 135 acres would be treated with a patch-mistletoe prescription, under which approximately half of the trees in the stands would be removed in 3-5 acre patches, reducing canopy cover to about 50%. Approximately 92 acres of Douglas-fir forest in the Fox Creek drainage would be treated with a thin-mistletoe-aspen treatment, under which the conifer tree canopy cover would be reduced to about 35%. Approximately 725 acres of mountain shrub vegetation would be treated, about 319 acres of which currently have tree canopy cover greater than 40%, providing cover for deer and elk. Approximately 438 acres of aspen would be treated in under this alternative.

The treatments planned for all forested acres in the AA would reduce effective thermal cover by 1000 acres, or approximately 40%. This impact of this reduction would endure for decades, inasmuch as forests in which canopy cover is reduced to below 40% and no replanting is undertaken would not provide effective cover for at least 50 years. This would represent a low to moderate impact on use of the area by elk for thermal cover. On the other hand, because elk and deer use the area primarily during the summer, forage, not thermal cover, is the limiting factor. Further, additional cover would become established in the area, as forests that are not subject to complete canopy removal continue to develop.

Currently, approximately 1049 acres of hiding cover exists in the AA. Under Alternative 5, treatments of forested, mountain shrub, and aspen habitat would reduce the amount of hiding cover for wild ungulates in the AA by approximately 670 acres. This effect would be short-term, however, as shrub vegetation would be expected to redevelop and provide hiding cover within approximately 10 years.

The plan to use prescribed fire on treatment areas following the final harvest entry would present an immediate impact on wildlife due to disturbance associated with fire and fire management activities. Many wildlife species disturbed during prescribed burning would return to the AA within a relatively short period. However, much of the existing grass and shrub vegetation would be burned out from the understory, thereby precluding associated wildlife species from making unlimited use of the area until the shrub and grass communities recover. Approximately 12%, or 155 acres, of grass communities within forested stands in the AA would be burned under this alternative. These communities would be expected to recover within 1-2 years following burning, at which point they would provide higher quality forage for big game species in areas that currently are decadent and lack regeneration. Shrub communities would recover in about 5-10 years, and again would provide hiding cover and foraging habitat for big game and many other wildlife species. Invigorated growth of shrubs and grasses would provide more palatable and nutritious forage for wildlife species, where pre-burn forage was decadent.

Prescribed burns would decrease the amount of forage available for deer and elk on about 1285 acres of grasslands along the Snake River. This impact would be short-term, as native grass seed would be spread over these treated acres. Increased nutritive quality of available grasses after seeding would result in increased use of the area by big game during winter and early spring.

With the conversion of 914 acres of densely forested habitat to open forest, grass and shrub communities, and the prescribed burning of these communities, there would be an increase in the amount of forage available for deer and elk within approximately 2-5 years, although

burned areas would be unusable for wildlife in the immediate future. Because of the exposure of the forest floor to sunlight, native grasses, and soon afterward shrubs, would re-vegetate treated areas and provide forage and hiding cover for deer and elk. Further, the 1681 acres of treatments in mountain shrub, aspen and juniper communities also would provide for forage for deer and elk within 2-5 years. Burning of these communities and the grassland areas along the Snake River would enhance habitat quality for many species and increase the quality and quantity of forage for bighorn sheep, deer and elk. This increased quantity and quality of forage would, in turn, increase the likelihood that elk and deer would move onto public lands, helping to meet the an ODFW objective of moving elk and deer off of private lands and decreasing the amount of agricultural damage caused by these animals. Following prescribed burning, the planting of native bunchgrass species and treatments to control noxious weeds, high quality forage would replace annual grasses such as the prominent medusahead.

Because treated areas would lose there effectiveness as hiding cover, exposure to hunting pressure would increase for deer and elk in the short term. Shrubs would reestablish, however, and begin to provide hiding cover for deer and elk with 5-10 years.

Aspen communities in the AA provide a unique habitat. This habitat currently is threatened. Under Alternative 5, aspen would be released and allowed to regenerate, and it is expected that within approximately 2-5 years these aspen stands would provide additional foraging habitat for big game. Enhancement of these aspen communities also would increase habitat diversity and, consequently, wildlife diversity in the AA.

4.9.4.2 Big Game Wildlife Cumulative Effects

Timber harvesting has occurred on private lands in the Lookout Mountain vicinity, resulting in the conversion of densely forested areas to grass/shrub communities. Additional harvesting is scheduled for other private lands in the area, so that all or most of the private land adjacent to the AA would be converted from closed forest vegetation communities to open forest vegetation communities, shrub lands, and grasslands. Thermal and hiding cover has been all but eliminated on these areas, and deer and elk have been forced to use public lands or other private lands in the general area for these habitat requirements. Because of the timing of the treatments associated with Alternative 5, cumulative effects to big game would be minimal; as stands are allowed to recover from one series of treatments and begin to provide the forage and cover habitat that had been lost, another series of treatments would occur. Therefore, the effects of the treatments would be staggered, and only minor changes to home range and habitat use would be expected. The first series of treatments would occur within 5-8 years and the next series of treatments would occur in 10-15 years. After approximately 15 years there would be a moderate loss of cover habitat and dense forest habitat throughout the Lookout Mountain Area. Most, if not all, of this forest habitat would never re-establish itself. Periodic underburning and precommercial thinning would prevent fir trees from reestablishing and again developing into a dense forest. This would change the overall wildlife species composition of the area from species that depend upon dense forest habitats to species that rely on open forest habitat for their life history needs. As dense forests are opened and discouraged from re-establishing, grasses and shrubs under the forest canopy would increase and then remain stable for years following the treatments. Periodic underburns and management activities would continue to maintain these vegetation communities, and forage for wild ungulates generally would increase.

4.9.4.3 Special Status Species

Northern Goshawk - Considering the one nesting pair of northern goshawks known to exist in the Sisley Creek sub-watershed, management recommendations would follow Reynolds, et. al. (1992) for habitat modifications and goals within the Post-fledgling Family Area (PFA) and nesting stands.

Treatments proposed under this alternative substantially would modify suitable habitat for the northern goshawk outside of the goshawk management area. Proposed treatments
would reduce potential nesting habitat by approximately 914 acres, leaving approximately 2005 acres of suitable nesting habitat within the AA.

The treatments within the forested stands associated with this alternative would contribute to the development of healthy forests that are necessary for the provision of future nesting habitat for goshawks. As younger forest stands grow into older stands, they provide nesting and foraging habitat. As such, it is recommended goshawk habitat in and around the nest site include a diversity of age classes and seral stages of forest stands. With approximately 3400 acres (BLM and private) of suitable nesting habitat in the Lookout Mountain vicinity, reduction by 914 acres would leave approximately 73% nesting habitat, which is well within the goshawk habitat management guidelines recommendation for retention of 60% of young, mature, and old forest habitat. Further, within 50-75 years, as stands continue to grow and develop, the quality and quantity of goshawk habitat would increase in these stands.

An increase in open areas brought about by forest health treatments would provide habitat for rodents that rely on seed sources and new grass and forb growth for food. These small mammals are the main prey for goshawks. Therefore, the treatments planned for this alternative would increase the prey base for goshawks and potentially increase the health and, minimally, the number of goshawks located in the area.

Sage Grouse - Under this alternative, sage grouse would be impacted by the modification of sagebrush habitat by prescribed fire. Approximately 200 acres of sagebrush habitat would be burned for rangeland improvement purposes, reducing the amount of potential sage grouse habitat in the AA by approximately 2%. This impact would be considered negligible.

Rangeland management through the implementation of Standards and Guides would improve sagebrush habitat within the AA within approximately 10 years. Improvement of the sagebrush communities would provide higher quality habitat for sage grouse and other sagebrush obligate wildlife species. Increased growth of grasses following range burns and more intensive rangeland management would increase potential early brood rearing habitat for sage grouse.

4.9.4.4 Roads

Following treatments, approximately 80.1 miles of open road would exist in the AA under Alternative 1. This equates to approximately 1.35 miles of open road per square mile in the AA, which falls within the 1.5 miles per square mile standard that is used to as a yardstick for minimum habitat effectiveness for big game. Therefore, road miles would have only a minor impact on big game in the area.

Roads impacting riparian habitat essential to wildlife would be decommissioned and rehabilitated, thereby decreasing impacts associated with disturbance from vehicles traveling through the area. Road miles in the area would decrease slightly, and conscientious road siting would minimize impacts to high quality wildlife habitat such as riparian areas. Further, eliminating roads from high wildlife use areas would decrease disturbance to big game during hunting seasons and would effectuate higher quality hiding cover. In all, the expected road-related impacts on wildlife would be low.

4.9.5 Recreation

The effects of Alternative 5 are identical to those under Alternative 2, with the exception that larger diameter Douglas-fir trees would be retained. The number of acres impacted by harvest activities would remain the same with the same impacts to recreation. The only change in impacts would be that large trees generally are preferred by recreational users and would create a more desirable stand for camping and aesthetics.

4.9.6 Visual Resources

The effects of this alternative on the visual resource would be the same as those under Alternative 1. Even though more of the conifer greens would be retained, a strong change in form, color and texture would be created by timber harvest treatments.

Few treatments meet the VRM objectives during harvest. Recovery usually takes several years and goes through several phases. This EIS covers a 15-year cycle with most treatments calling for two separate entries. The analysis is based on the visual impacts probable 6+ years after the first entry.

4.10 Summary Tables

The following table summarizes and compares vegetative treatments between all action alternatives:

Table 19. Forest and Woodland Vegetation Comparison Between Alternatives

All rankings indicate the change from current conditions.

Ranking: 1 = most change from current conditions; 5 = least change from current conditions

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Forest Stand Structure[4]					
% harvested	63%	45%	63%	19%	35%
Ranking	2	3	1	5	4
Insect in Douglas-fir stands[5]					
ac thin or open	1186	882	1846	214	825
Ranking	2	3	1	5	4
Disease in Douglas-fir stands[6]					
ac treat	604	275	0	0	81
Ranking	1	2	4	5	3
Old Forest[7]					
% OF converted	40 %	27 %			
% OF thinned	19 %	11 %	59 %	12 %	0
Ranking	1	3	2	4	5
Juniper Density[8]					
% treat	34 %	32 %	34 %	31 %	28%
Ranking	3	3	3	3	3
Aspen Health[9]					
aspen rating	38	875	3800	1129	898
Ranking	5	4	1	2	3
Shrub					
shrub rating	1292	1093	4400	932	1093
Ranking	2	3	1	5	3
Overall Ranking					
Average	2.3	3.0	1.9	4.1	3.6
Ave Ranking	2	3	1	5	4

The ratings listed above are relative rankings and only show differences between alternatives, i.e., Alternative 3 is the most changed from current conditions and Alternative 4 is the least changed.

The following table summarizes and compares the soil and water effects of all action alternatives:

Table 20. Summary of Soil/Water Effects and Acreages for all Action Alternatives

Treatment/Effect	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Total Harvest Acres, % of total	2287 = 30%	1885 = 25%	2509 = 33%	773 = 10%	1501 = 20%
Mountain shrub treatment acres, % of total (Mid effect)	437 = 20%	393 = 22%	440 = 18%	35 = 5%	319 = 23%
Aspen treatment acres, % of total (Mid effect)		179 = 10%	223 = 9%	191 = 29%	148 = 11%
Thin treatment acres, % of total (Minimal effect)	822 = 38%	447 = 25%			516 = 38%
Thin mistletoe acres, % of total (Minimal effect)	304 = 14%	250 = 14%			157 = 11%
Thin-mistletoe-aspen acres, % of total (Minimal effect)		125 = 7%			92 = 6%
Mistletoe treatment acres, % of total % of total (Most Effect)	604 = 28%	180 = 10%			14 = 1%
Mistletoe patch acres, % of total (Most Effect)		191 = 11%			135 = 10%
Mature treatment acres, % of total (Minimal effect)			637 = 38%		
Immature treatment acres, % of total (Mid effect)			1089 = 46%		
Isolated parcel treatment acres, % of total (Minimal effect)				154 = 24%	
Satisfactory cover treatment acres, % of total (Minimal effect)			104 = 16%		
Marginal cover treatment acres, % of total (Mid effect)				169 = 26%	
Harvest Method					
Helicopter acres, % of total (Least negative effect to soil)	972 = 43%	613 = 33%	1184 = 50%	294 = 45%	428 = 31%
Cable acres, % of total (Mid effect to soil)	397 = 17%	631 = 33%	418 = 17%	232 = 36%	378 = 27%
Ground acres, % of total (Most negative effect to soil)	798 = 40%	518 = 27%	787 = 33%	132 = 20%	578 = 42%
Harvest acres delayed until streams are stabilized	405	211	294	76	238
Streams and Roads					
Stream and riparian area restoration, miles	11.4	19.3	20.6	19.3	19.3
Percent of streams within the AA receiving riparian/stream restoration	16.6	28.1	30.0	28.1	28.1
Roads decommissioned, miles	2.5	5.8	2.1	10.7	5.8

Minimal affect = 80+ basal area existing to 80-100 basal area after treatment
100+ basal area existing to 100-120 basal area after treatment (Isolated parcel treatment)
Thinning to 70% canopy cover (Satisfactory cover treatment)
Mid affect = 10-15 basal area existing to 5 basal area after treatment
80+ basal area existing to 60-80 basal area after treatment (Immature treatment)
Thinning to 40% canopy cover (Marginal cover treatment)
Most affect = 60-80 basal area existing to 5 basal area after treatment

The following table summarizes and compares the impacts to wildlife of all action alternatives:

Table 21. Wildlife Impacts Alternative Comparison Table

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
1. Thermal Cover Reduction	1575 acres 63% High	1116 ac 45% Low	1663 ac 66% High	0 ac Very Low	1000 ac 40% Low
2. Hiding cover reduction	768 ac 73% High	782 ac 75% High	839 ac 80% High	0 ac Very Low	670 ac 64% Mod
3. Mt Shrub Burns	1254 ac 58% Mod	869 ac 40 % Low	1263 ac 59% Mod	342 ac 16% Very Low	725 ac 34% Low
4. Grasses Burn	171 ac 13% Low	147 ac 12% Low	171 ac 13% Low	0 ac Very Low	155 ac 12% Low
5. Goshawk Habitat reduction	1730 ac 59% Mod	1193 ac 41% Low	1726 ac 59% Mod	323 ac 11% Very Low	914 ac 31% Low
6. Forage Increase	2984 ac 70% High Pos.	3183 ac 71% High Pos	4253 ac 77% High Pos.	1898 ac 60% Mod. Pos.	2595 ac 67% Mod Pos.
Overall impact	High	Moderate	High	Low	Moderate
Relative Index $\frac{(1x2x3x4x5)^{1/n}}{6}$	.554	.458	.560	.308	.410

Using the habitat modifications listed above, this relative comparison table indicates that Alternative 4 will have the least impact to wildlife in the area. By comparison, Alternative 3 will have the greatest impact to wildlife. Alternative 2, the preferred Alternative, will have a moderate impact to wildlife in the area.

The following table summarizes and compares the impacts to visual resources of all action alternatives. All treatments are designed to improve vegetative and riparian conditions in the long term. Short-term negative impacts to the visual resource are inherent in management activities designed to reduce the risk of potentially catastrophic fire, insect and successional changes:

Table 22. Alternative Comparison for Visual Resource Management (VRM)

Key Observation Points (KOP) and Treatments	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	
KOP 1 - mistletoe	not*					
	- shrub	meet###	meet###	meet###	meet###	
	- PFA	meet###	meet###	meet###	meet###	meet###
	- m. patch		not*			not*
	- mature			not*		
	- Rx fire			meet####		
	- road	not#	not#	meet##		not#
	- aspen				not****	
KOP 2	- PFA	meet###	meet###			meet###
	- thin	not**				not**
	- rx fire	meet####				
	- shrub		meet###			
	- immature			not*		
	- marginal				meet	
	- road	not#	not#			not#
KOP 3	- mistletoe	not*				
	- mature			not*		
	- old growth					not*
KOP 4	- juniper	not***	not***	not***	not***	not***
	- thin	meet**	meet**			meet**
KOP 5	- thin	not**				
	- immature			not*		
	- isolated				not*	
	- road	not#	not#	not#		not#

** The objective of mistletoe treatments is to eliminate mistletoe infestation in Douglas-fir stands, which requires the harvesting or isolating of all infected trees. Visually, color and texture will be strongly affected. Desired Class II VQOs may not be achieved for as many as twenty years. The other Douglas-fir treatments, i.e., mature, immature, isolated and old growth, have the same effect on the visual resource.*

*** Thinning treatments are designed to reduce the risk of insect damage. These treatments will not meet VQOs in the short term due to strong contrasts in texture and form, but are expected to meet VQOs within five years.*

**** Juniper treatments are designed to return sagebrush/grasslands to their historic vegetative condition. Eliminating juniper will create strong color and texture contrasts, and thus will not meet VQOs. After the juniper skeletons and stumps decompose, VQOs will be met.*

***** Aspen treatments are designed to protect and invigorate aspen stands. In the short term, these treatments will not meet VQOs, but will fully recover within a few years and improve the fall color component of the visual resource.*

 # The objective of road construction is to replace existing roads that currently cause riparian damage. The visual impacts of these roads will be strong; they never will meet Class II VQOs, but will soften over time.

The temporary road along the ridge will meet VQOs only if screened by vegetation.

Shrub and PFA treatments will meet VQOs only if no unnatural, straight lines are visible from the KOP.

Prescribed burns will not meet VQOs in the short term only, due to blackening.

All blanks mean this treatment is not visible from KOP in this alternative.

The above table displays graphically a ranking system that analyzes the alternatives based upon their impact on VRM. Based upon the table, the rank of the alternatives regarding VRM, from least impacting to most impacting is as follows: Alternative 4, Alternative 2, Alternative 3, Alternative 1, and Alternative 5.

4.11 Short-term Use v. Long-term Productivity

This project is being undertaken with full awareness of the fact that maintenance and enhancement of ecosystem health generally results in short-term adverse impacts to resources. Essentially, these impacts represent the price that land managers need to pay in order to ensure the long-term productivity of these resources. The current proposal is no exception to this rule; short-term use will change as a result of the proposed activities. This change in use is discussed in the preceding sections of Chapter 4.

Following treatments, the AA would look treated - the effects generally would not be hidden. There would be fewer trees, there would be more slash on the ground at times, entire stands of juniper would be removed, and prescribed burns would blacken the ground in places. Wildlife would be forced to adapt to changed conditions. Recreational experiences would change, and views may not be as natural or appealing. Streams may bear increased sedimentation. And yet, it must be noted that these effects of the proposed treatments, in all likelihood, would occur naturally at some point, but in an uncontrolled and potentially catastrophic way. Naturally declining forest health would lead to increased fuel loads and increased risk of fire. The occurrence of such fire would impact wildlife, recreation, and visual resources. Stand replacement fire would impact streams more than would the proposed activities, leading to dramatic increases in sedimentation and stream temperature. Clearly, the proposed activities simply would hasten and, at the same time, minimize these impacts through the implementation of mitigation measures. All adverse effects will be addressed by these measures.

Most importantly, the managed way in which the landscape is changed would result in speedier recovery and restoration of ecosystem health. In time, treated forests would reestablish themselves; multi-age stands would develop. Depending upon the alternative chosen, it would be possible to minimize the likelihood of insect and disease infestation. Wildlife would enjoy superior habitat. Visual resources and recreation opportunities would improve over the long term, the degree to which is dependant upon which alternative is selected. Streams would stabilize as riparian vegetation is established with renewed vigor. Stream temperatures would decrease as streamside hardwoods begin to provide ample shade. Fisheries would improve dramatically. Rangeland vegetation would improve as noxious weeds are replaced by native perennials.

4.12 Irreversible/Irretrievable Commitment of Resources

Because the effected resources in the AA are dynamic in nature, the irreversible/irretrievable commitment of resources would be minimal. Forests, rangelands, and riparian vegetation would reestablish itself following treatments. Stream function would be improved over time. Wildlife would suffer no irreparable effects. Recreation and visual resources would improve over time. Cultural resources would not be impacted. Any effects on these resources would be strictly temporary.

Depending upon the alternative chosen, temporary or permanent road would be constructed. This road construction represents the one clear irretrievable impact on the AA landscape. Even temporary road construction would produce long-term effects on the productivity of road sites, on recreation, and on visual resources.

Some consider overstory removal or regeneration harvest to be an irretrievable impact, particularly when such treatment is performed in stands classified as old forest or in areas considered pristine. The Lookout Mountain area is not pristine. Further, it is the professional opinion of BLM resource specialists that harvest treatments would not present irretrievable impacts, even in old forest. These forests are highly susceptible to insect and disease infestation and, consequently, to stand replacement fire. The effects of such a fire likely

would be devastating, and more irreversible than any of the proposed activities. Further, as stated above, forests are dynamic. The effects of treatments in any forested stand, be it old forest or not, would be reversed in time.

4.13 Mitigation

4.13.1 Mitigation Measures Common to All Action Alternatives

4.13.1.1 Forests and Woodlands

Leaving scattered fine fuels on the ground following treatment would mitigate erosion of friable granitic soils and, once those fuels are decomposed, would improve the tilth and fertility of these relatively sterile soils.

Unless there was a specific management objective requiring more intensity for a particular project, all of the prescribed burns would emphasize short flame length and low intensity heat whenever possible to reduce effects to soils and desirable vegetation. Further, all prescribed burns in mountain shrub, aspen, and juniper stands would be planned in coordination with forest health slash burning and broadcast burning projects to limit the amount of acres burned at any given year within individual watersheds to no more than 350 acres. This acreage limitation would not apply to lower elevation rangeland prescribed burns.

4.13.1.2 Range

Any identified macrobiotic crusts would be protected by avoidance, minimization of surface disturbance, and/or maintenance of low intensity fires pursuant to prescribed burning activities.

4.13.1.3 Watersheds and Fisheries

Designated buffers on all streams would protect water quality and riparian vegetation.

Seeded areas would be protected until ground cover is well established.

Noxious weed treatments would be done by hand with back-pack sprayers. All buffers and administrative procedures set forth in the District Weed Plan would be followed.

4.13.1.4 Cultural Resources

All design features addressing protection and monitoring of cultural resources as enumerated in Section 2.2.9 would be incorporated as mitigation measures.

4.13.1.5 Recreation

All the alternatives have varying degrees of positive and negative impacts on the recreation resource. The following is a summary of mitigation measures that are common to all action alternatives. Until such time as individual trees are selected for harvest, roads located on the ground, rock sources identified, and many other aspects of developing a timber sale, it is difficult to assess the specific impacts to a specific site. The mitigation measures are goals to strive for which would reduce the impacts in a general sense.

- When a road is opened for temporary use, it would be closed to the public as soon as possible. Roads would not be closed with gates unless absolutely necessary.

- Closed roads and general OHV use would be monitored for unauthorized use, and closure would be enforced.

- Dispersed campsites would be augmented (i.e., improve access into a site, smooth and level) where possible.

- Buffers, consisting of undisturbed areas around dispersed campsites, would be created during harvest activities. No residual trees and vegetation would be damaged, and slash would not be left in the immediate vicinity of campsites.

- Prescribed burning activity would avoid dispersed sites.

There are many things that can be done to improve the recreation resource that are not directly tied to an action alternative but every opportunity should be taken to implement them.

- Dispersed site would be inventoried, mapped and monitored. If needed, sites would be hardened which would reduce erosion and related sediment transport and reduce off-site vegetation damage. Metal fire rings would be installed in higher use areas to prevent inappropriate fire ring construction. Hazard trees would be removed to improve safety. Use of native materials (boulders, logs, gravel) in defining and hardening sites would help retain the natural appearance desired by dispersed campers. These improvements would encourage campers to continue using these sites versus creating new sites.

- Signing of major roads would be of great assistance to the recreating public. Signing of public land boundaries would be helpful, but is probably not realistic with anticipated budgets.

- Regular law enforcement patrols are needed throughout the heavy use season.

- The Hibbard Creek corrals would be painted to reduce their visual impact.

- A management plan would be developed for the cabin at Sisley Creek.

4.13.1.6 Visual Resources

There are several mitigation measures that are common to all alternatives and treatments:

- Creation of uncharacteristic straight lines along the public land boundary with private lands would be avoided. In some cases, logging on private land has already created such lines. Tree harvest adjoining these areas would be designed to blend the lines into the landscape and create a feathered appearance rather than an abrupt edge. Overstory trees would not be harvested in patterns that create straight lines on the horizon or create geometric shapes when viewed from a distance.

- A screen of vegetation would be retained along the Lookout Mountain Road.

- When constructing a new road or maintaining an existing road, mineral materials would not be sidecast over the slope so as to be visible from the Lookout Mountain Road, and notches would not be created in the skyline when clearing the Right of Way. Screen trees would be retained or planted.

- Slash within the foreground of Lookout Mountain Road and around Bassar Diggins would be hand piled and burned.

- Stump height would be minimized and stumps would be covered with forest/grassland litter within 50 feet of Lookout Mountain Road.

- Skyline logging system impacts would be minimized by limiting the number of corridors created and reducing straight, defined edges whenever possible. Impacts of landings would be minimized through careful site selection.

- Upon identification of a specific rock source for road construction needs, VRM analysis would be conducted to determine the extent of the expected impacts of rock quarrying and removal and whether these activities would meet the Visual Quality Objective for that specific site.

4.13.2 Mitigation Measures for Alternative 1

4.13.2.1 Watersheds and Fisheries

This alternative proposes LWD placements and riparian planting as mitigation. LWD would be placed in 10.7 miles of streams currently characterized by down-cutting and unstable streambanks and riparian areas. LWD would capture sediment to start the restoration process before harvest activities are undertaken. LWD placements would help restore the water table, the stream channel, pool habitat, streambank stability, and the riparian area. Hardwood planting is proposed for 11.4 miles of stream. The hardwoods (alder, aspen. red-osier dogwood, willow, and cottonwood) would be planted to stabilize streambanks and provide shade to the stream.

4.13.3 Mitigation Measures for Alternative 2

4.13.3.1 Watersheds and Fisheries

This alternative proposes LWD placements, hardwood/sedge planting, seeding and noxious weeds treatments as mitigation on 47.4 miles of stream. LWD would be placed in 16.2 miles of streams currently characterized by down-cutting and unstable streambanks and riparian areas. LWD would capture sediment to start the restoration process before harvest activities are undertaken. LWD placements would help restore the water table, the stream channel, pool habitat, streambank stability, and the riparian area.

Hardwood (alder, aspen. red-osier dogwood, willow, and cottonwood) planting on 30 miles of stream, seeding along 6.2 miles and aspen treatments on 3.5 stream miles would stabilize streambanks and provide shade to the stream. Noxious weed treatments would be performed on 7.7 streamside miles to help restore native perennial riparian and floodplain vegetation.

4.13.4 Mitigation Measures for Alternative 3

4.13.4.1 Watersheds and Fisheries

This alternative proposes LWD placements, hardwood/sedge planting, seeding and noxious weeds treatments as mitigation on 39.7 miles of stream. LWD would be placed in 16.2 miles of streams currently characterized by down-cutting and unstable streambanks and riparian areas. LWD would capture sediment to start the restoration process before harvest activities are undertaken. LWD placements would help restore the water table, the stream channel, pool habitat, streambank stability, and the riparian area. Hardwood planting along 25 miles of stream would stabilize streambanks and provide shade to the stream.

4.13.5 Mitigation Measures for Alternative 4

4.13.5.1 Watersheds and Fisheries

This alternative proposes LWD placements, hardwood/sedge planting, seeding and noxious weeds treatments as mitigation on 47.4 miles of stream. LWD would be placed in 16.2 miles of streams currently characterized by down-cutting and unstable streambanks and riparian areas. LWD would capture sediment to start the restoration process before harvest activities are undertaken. LWD placements would help restore the water table, the stream channel, pool habitat, streambank stability, and the riparian area.

4.13.6 Mitigation Measures for Alternative 5

4.13.6.1 Watersheds and Fisheries

This alternative proposes LWD placements, hardwood/sedge planting, seeding and noxious weeds treatments as mitigation on 47.4 miles of stream. LWD would be placed in 16.2 miles of streams currently characterized by down-cutting and unstable streambanks and riparian areas. LWD would capture sediment to start the restoration process before harvest activities are undertaken. LWD placements would help restore the water table, the stream channel, pool habitat, streambank stability, and the riparian area.

4.14 Monitoring

During project implementation, all project design features would be monitored to assure compliance. After project completion, monitoring would be performed in order to determine whether objectives were met.

4.14.1 Range

Range burn success and post-burn grazing readiness would be monitored through the use of photo plots. Photo plots would be established prior to burning, and photographs showing pre-burn conditions would be taken. Within 3-5 years following prescribed burning, additional photographs would be taken so as to monitor vegetative progress. While pastures would be rested from grazing for a minimum of two years following burning, the decision to allow grazing ultimately would be made by BLM natural resource specialists, based upon the health and vigor of two key forage species, bluebunch wheatgrass and Idaho fescue.

Approved BLM utilization monitoring methods in designated key areas will be used to determine utilizations levels on all of the allotments within the Lookout Mountain GU. Maximum allowable utilization of the current years growth will not exceed 50% on upland

Table 23. Key Grazing Monitoring Areas and Allowable Use - Lookout Mountain

Allotment Name	Monitoring Area	Utilization Standard (%)
Snake River (#1001)	Morgan Creek	45% Utilization Level
	Pole Gulch	45% Utilization Level
	Spring Gulch	45% Utilization Level
	Hibbard Creek	45% Utilization Level
	Fox Creek	45% Utilization Level
Wells Basin (#1070)	Sisley Creek	45% Utilization Level
Gold Creek (#1064)	Gold Creek	45% Utilization Level
Soda Creek (#3026)	Little Deacon Creek	45% Utilization Level
	Conner Creek	45% Utilization Level
	Douglas Creek	45% Utilization Level
	Soda Creek	45% Utilization Level
	Canyon Creek	45% Utilization Level
	Vail Creek	45% Utilization Level
	Quicksand Creek	45% Utilization Level
	Alder Creek	45% Utilization Level
	Camp Creek	45% Utilization Level
Daly Creek (#3015)	Daly Creek	45% Utilization Level

grasses, 45% on riparian grasses and forb species and 30% on riparian shrubs. These guidelines will become part of the terms and conditions for the permittees' new ten-year grazing permit. Livestock will be moved to the next pasture in the rotation sequence or off the allotment (if the livestock are in the last pasture of the rotation schedule) after utilization standards are met. The monitoring key areas and allowable use for each allotment are identified in Table 23 – p. 160.

4.14.1.1 Proper Functioning Condition (PFC) Monitoring

PFC monitoring would be done as part of the Standards and Guides monitoring for range management. PFC surveys are covered by Standard 2 of the evaluation, which initially identified the range condition on each allotment. These surveys are used to evaluate stream and riparian area conditions within the allotments. All PFC surveys that initially identify streams and riparian areas as Functional at Risk, Downward Trend (FARD) or Functional at Risk, Trend Not Apparent (FARN) would be conducted again in 5-10 years. Streams categorized as Proper Functioning Condition (PFC) or Functional at Risk, Upward Trend (FARU) would be monitored as part of the overall allotment management plan to assure streams continue in an upward trend and meet stream and riparian objectives.

4.14.1.2 Riparian and Water Quality Monitoring

Stream temperature monitoring of various streams within the AA would continue so that restoration activities can be analyzed for effect on water temperature. Monitoring would occur annually during the summer using continuous recording thermographs.

Riparian vegetation would be monitored using survival surveys to record percentage of surviving planted species. Further, existing riparian vegetation would be monitored in RCAs where restoration activities may damage this vegetation and reduce shade.

For road decommissioning projects, bed and bank stability monitoring would be done to ensure that, where road crossings are removed, the stream channel has been returned to a naturally stable gradient and width. Multiple stream surveys over a few years would be conducted to ensure that restoration objectives are being met.

Similarly, in conjunction with LWD placement projects, stream surveys would be conducted to ensure that the LWD has been placed properly, is stable, and is achieving restoration objectives.

All of the above monitoring would be used to ensure that restoration objectives are being met and that restoration activities are not significantly impacting downstream water quality, contributing to the need to list new streams, or further degrading streams already listed as water quality limited under the Oregon 303(d) regulation. Monitoring also would ensure that restoration activities are consistent with Oregon's antidegradation policy, which is intended to protect water from unnecessary degradation from point and non-point pollution sources and to protect, maintain or enhance water quality so as to safeguard all existing beneficial uses.

4.14.2 Recreation

OHV use by hunters is becoming very popular. Hunters tend to pioneer new trails looking for game or retrieving their kill. Since hunting represents a large part of the recreational use in the AA, OHV impacts may increase dramatically. Therefore, OHV use will be monitored to assure compliance with applicable OHV designations.

Appendices

Appendix 1

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Appendix 2

Glossary

ALLOTMENT: A parcel of federal land on which a lessee is granted permission to engage in a particular activity (e.g., livestock grazing).

ALTERNATIVE: One of at least two proposed means of accomplishing planning objectives.

ANALYSIS: The examination of existing and/or recommended management needs and their relationships to discover and display the outputs, benefits, effects and consequences of initiating a proposed action.

ASSESSMENT: A form of evaluation based on the standards of rangeland health, conducted by an interdisciplinary team at the appropriate landscape scale (e.g., pasture, allotment, sub-watershed, etc.) to determine rangeland conditions.

AQUATIC: Living or growing in or on the water.

BIODIVERSITY: The variety of life and its processes, and the interrelationships within and among various levels of ecological organization. Conservation, protection and restoration of biological species and genetic diversity are needed to sustain the health of existing biological systems. Federal resource management agencies must examine the implications of management actions and development decisions on regional and local biodiversity.

COMMERCIAL THINNING: The removal of generally merchantable trees from an even-aged stand, usually to encourage growth of the remaining trees.

COMPACTION: The condition in which soil particles have been rearranged so as to decrease void space, thereby increasing soil bulk density and often reducing permeability.

CONSULTATION: Formal consultation is a process that occurs between the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS) and a federal agency. It begins with the federal agency's written request for consultation under §7(a)(2) of the federal Endangered Species Act regarding a federal action that may affect a listed species or its critical habitat. It concludes with the issuance of a Biological Opinion (BO) under §7(b)(3) of the Act. Informal consultation is an optional process that includes all discussions, correspondence, etc., between the FWS or the NMFS and the federal agency or a designated non-federal representative prior to formal consultation. If, pursuant to informal consultation, the FWS or the NMFS determines that the proposed agency action is not likely to affect listed species, it may concur with the action agency that formal consultation is unnecessary.

CRITICAL HABITAT: Under the federal Endangered Species Act, critical habitat is designated by the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS) for a listed species. This habitat is that which is considered necessary for the survival of the species.

CULTURAL RESOURCE (or CULTURAL PROPERTY): A definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups.

CUMULATIVE EFFECTS: Effects on the environment that result from the incremental effect

of the action when added to past, present and reasonably foreseeable future actions regardless of what agency or person(s) undertakes those other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

DEGREE OF FUNCTION: A level of physical function relative to properly functioning condition, commonly expressed as properly functioning, functioning-at-risk or non-functioning.

DESIGNATED ROAD: A linear "transportation facility" on which state-licensed, two and four-wheeled vehicles can travel. By definition, these do not qualify as trails.

DIVERSITY: The aggregate of species communities, individual species, and the genetic variation within species and the processes by which these components interact within and among themselves. The elements of diversity are: 1. Community diversity (e.g., habitat , ecosystem); 2. Species diversity; and 3. Genetic diversity within a species. All three of these elements change over time.

ECOSYSTEM: A system comprised of biotic (e.g., plants, animals) and abiotic (e.g., rocks, water) components.

ENDANGERED SPECIES: Any species in danger of extinction throughout all or a significant portion of its range. These species are listed by the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS), are published in the Federal Register and are afforded protection under the Endangered Species Act.

EPHEMERAL STREAM: A stream that flows only in direct response to precipitation, and whose channel is, at all times, above the water table.

FINE FUELS: Dead and live on-the-ground organic material between 0-3 inches diameter.

FLOODPLAIN: A plain along a stream or river onto which water flow spreads during floods.

FORAGE: Vegetation used for animal consumption.

FUNCTIONING-AT-RISK: Riparian and wetland areas that are in functional condition but that possess a soil, water or vegetation attribute that makes them susceptible to degradation.

GROUND WATER: Water in the ground that is in the zone of saturation; water in the ground that exists at or below the water table.

GUIDELINE: Practices, methods, techniques and considerations used to ensure that progress is made in a way and at a rate that achieves a particular standard.

HABITAT: A specific set of physical conditions in a geographic area that surrounds a single species, group of species, or large community. In wildlife management, the major components of habitat are food, water, cover and territory.

IMMATURE FOREST: Stands dominated by Douglas-fir trees mainly less than 120 years old. In general, these stands are dense, with average stand basal area from 160ft - 200ft per acre and canopy cover in the 75%-95% range.

IMPACT: Synonymous with "effect." Impacts may be categorized as ecological, aesthetic, historic, cultural, economic, social or health. Impacts may be beneficial and/or detrimental (adverse). Impacts may be termed direct, indirect or cumulative:

- Direct - Impacts caused by an action and occurring at the same time and place.
- Indirect - Impacts caused by an action and occurring later in time or farther in distance, but still reasonably foreseeable.

- Cumulative - Impacts that accrue incrementally over time - impacts of an action when taken in concert with other past, present and reasonably foreseeable future actions regardless of what agency or person(s) undertakes these other actions.

INDICATORS: Parameters of ecosystem function that are observed, assessed, measured and/or monitored directly or indirectly to determine whether a standard has been attained.

INFILTRATION: The downward entry of water into the soil.

INTERMITTENT STREAM: A stream that flows only at certain times of the year when it receives water from springs or from a surface source, such as melting snow in mountainous areas.

KEY OBSERVATION POINTS (KOPs): Contrast ratings used in determining Visual Resource Management (VRM) inventory classes are made from critical viewpoints, or KOPs. Factors considered in selecting KOPs are angle of observation, number of viewers, length of time the project is in view, relative project size, season of use and light conditions.

LESSEE: An organization or person(s) holding a lease to engage in a particular activity (e.g., livestock grazing) on federal land.

MATURE FOREST: Mature forest is similar to "old forest." The oldest trees in these stands are120-150 years old, and the largest trees are 24-32 in diameter.

MITIGATING MEASURES: Constraints, requirements or conditions imposed on agency actions so as to reduce the significance of or eliminate an anticipated impact of a proposed resource management activity to environmental, socioeconomic or other resource value. Committed mitigating measures are those measures that the BLM is committed to enforce (i.e., all applicable laws and their implementing regulations).

MONITORING: A process of collecting information to evaluate if objectives and anticipated or assumed results of a management activity or plan are being realized or if implementation is proceeding as planned.

NATURALNESS: An area which "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable" (§2c, Wilderness Act).

NON-FUNCTIONING: Riparian and wetland areas that clearly do not have adequate vegetation, landform or large woody debris to dissipate stream energy associated with high water flows.

NOXIOUS WEEDS: Plants that are injurious to public health, agriculture, recreation, wildlife or any public or private property.

OFF-HIGHWAY VEHICLE (OHV): Any motorized vehicle designed for or capable of cross-country travel over lands, water, sand, snow, ice, marsh, swamp-land or other terrain. BLM-administered lands bear OHV designations as follows:

> OPEN: Designated areas and trails where off-road vehicles may be operated, subject to operating regulations and vehicle standards set forth in BLM Manuals 8341 and 8343; or an area where all types of vehicle use is permitted at all times, subject to the standards in the aforementioned BLM Manuals.
>
> LIMITED: Designated areas and trails where the use of off-road vehicles is subject to restrictions, such as limiting the number or types of vehicles allowed, dates and

times of use (seasonal restrictions), limiting use to existing roads and trails, or limiting use to designated roads and trails. Under the designated roads and trails designation, use would be allowed only on roads and trails that are signed for use. Combinations of restrictions are possible, such as limiting use to certain types of vehicles during certain times of the year.

CLOSED: Designated areas and trails where the use of off-road vehicles is permanently or temporarily prohibited. The use of off-road vehicles in closed areas may be allowed for certain reasons. However, such use shall be made only with the approval of the authorized officer.

OLD FOREST: Douglas-fir stands that have at least 8 trees per acre that are 150 years old and are greater than 21 inches diameter at breast height. All three criteria must be satisfied in order for a stand to be classified as old forest.

PERENNIAL STREAM: A stream that flows continuously. Perennial streams generally are associated with a water table in the localities through which they flow.

PRESCRIBED FIRE: Controlled application of fire to natural fuels under conditions of weather, fuel moisture and soil moisture that will permit confinement of the fire to a predetermined area. Such fire is designed to produce the heat intensity and rate of spread required to accomplish certain planned benefits, e.g., fuels consumption or preparation of an area for seeding. The overall objectives of prescribed fire are to employ fire scientifically in order to realize maximum net benefits at minimal environmental damage and acceptable cost.

PROPERLY FUNCTIONING CONDITION (PFC): Riparian and wetland areas are functioning properly when adequate vegetation, landform or large woody debris is present to dissipate stream energy associated with high water flows. Energy dissipation and the presence of large woody debris in the stream channel reduces erosion, improves water quality, filters sediment, aids in floodplain development, and improves flood-water retention and groundwater recharge. Adequate streamside vegetation anchors soil, stabilizes streambanks, aids in the development of diverse ponding and channel characteristics so as to provide habitat and sufficient water depth, duration and temperature necessary for fish production, waterfowl breeding, increased biodiversity and other uses.

RIPARIAN HABITAT: An area of land directly influenced by permanent (surface or subsurface) water, with visible vegetation or physical characteristics reflective of that permanent water influence. Lake shores and streambanks are typical riparian areas, while ephemeral streams or washes that do not bear free water-dependent vegetation are not.

SENSITIVE SPECIES: Species that 1) have appeared in the Federal Register as proposed for classification and are under consideration for listing as endangered or threatened, 2) are on an official state sensitive species list, or 3) are recognized by the BLM as needing special management so as to prevent their being placed on Federal or state endangered species lists.

SPECIAL STATUS SPECIES: Wildlife and plant species that are either Federal listed or proposed for listing as endangered or threatened, or state-listed or BLM-designated priority species.

THREATENED SPECIES: Any species likely to become endangered throughout all or a significant portion of its range in the foreseeable future. These species are listed by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service in accordance with the Endangered Species Act and published in the Federal Register.

TRAIL: A created or evolved "transportation facility" administratively designated for certain types of uses, including hiking, horseback riding, snowmobiling, cross-country skiing, motorcycling or OHV riding.

UPLANDS: Lands that lay above a riparian/wetland area or active floodplains of rivers or streams. These lands are not influenced by the water table or by free or unbound water.

VISUAL RESOURCE MANAGEMENT (VRM) CLASSES: Management classes for visual resources are determined on the basis of overall scenic quality, distance from travel routes and sensitivity to change.

Class I:	Provides primarily for natural ecological changes only. Any change to the characteristic landscape must be very low and must not attract attention.
Class II:	Changes in the basic visual elements caused by a management activity may be evident in the characteristic landscape, but the changes should not attract the attention of the casual observer.
Class III:	Changes in the basic visual elements caused by a management activity may be evident in the characteristic landscape, but should not dominate the view of the casual observer.
Class IV:	Changes in the basic visual elements attract attention and dominate the view of the casual observer.

WATERSHED: All land and water within the confines of a drainage divide.

WETLANDS: Lands that, because of their proximity to perennial water sources, are characterized by hydric soils and specialized wetland vegetation. Wetlands include swamps, marshes, bogs, wet meadows, river overflows, mud flats and natural ponds.

WILDFIRE: Any wildland fire that does not meet management objectives, thus requiring a fire suppression response. Once declared a wildfire, a fire no longer can be termed a prescribed fire.

Acronyms

AA:	Analysis Area
ACEC:	Area of Critical Environmental Concern
AMR:	Appropriate Management Response
AUM:	Animal Unit Month
BLM:	Bureau of Land Management
CEQ:	Council on Environmental Quality
CFR:	Code of Federal Regulations
CWA:	Clean Water Act
DBH:	Diameter at Breast Height
DEIS:	Draft Environmental Impact Statement
DEQ:	Department of Environmental Quality
DRFC:	Desired Range Future Condition
EA:	Environmental Assessment
EAWS:	Ecosystem Analysis at the Watershed Scale
EIS:	Environmental Impact Statement
ERMA:	Extensive Recreation Management Area
FARD:	Functioning At Risk Downward Trend
FARN:	Functioning At Risk No Apparent Trend
FARU:	Functioning At Risk Upward Trend
FEIS:	Final Environmental Impact Statement
FLPMA:	Federal Land Policy and Management Act
FWS:	United States Fish & Wildlife Service
GU:	Geographical Unit
HE:	Habitat Effectiveness
HEI:	Habitat Effectiveness Index
ICBEMP:	Interior Columbia Basin Ecosystem Management Project
IDT:	Interdisciplinary Team
KOP:	Key Observation Point
LWD:	Large Woody Debris
MO:	Management Objective
NEPA:	National Environmental Policy Act
NF:	Non-functional
ODFW:	Oregon Department of Fish and Wildlife
OHV:	Off-Highway Vehicle
PFA:	Post-fledgling Family Area
PFC:	Proper Functioning Condition
RCA:	Riparian Conservation Area
RHCA:	Riparian Habitat Conservation Area
RMP:	Resource Management Plan
RMPA:	Resource Management Plan Amendment
ROD:	Record of Decision
S&Gs:	Standards and Guides for Range Management
SHPO:	State Historic Preservation Office
TMDL:	Total Maximum Daily Load
USFS:	United States Forest Service
VRM:	Visual Resource Management
WQMP:	Water Quality Management Plan
WSA:	Wilderness Study Area

Appendix 3

DEIS Distribution List and Internet Availability

The DEIS will be available in the Bureau of Land Management Baker Resource Area, Vale District, and Oregon State offices, and on the internet at http://www.or.blm.gov/Vale/Planning/Planning-EnvirnAnalyses.htm. Documents to which the DEIS refers or tiers, including the Baker RMP DEIS, FEIS and ROD are available for inspection in the Baker Resource Area and Vale District offices during normal working hours. The Baker RMP also is available on the internet at the above address. Hard copies of the DEIS is being sent to the following individuals, agencies and organizations:

Elected Federal Officials
- U.S. Senator Gordon Smith
- U.S. Senator Ron Wyden
- U.S. Representative Greg Walden
- U.S. Representative Peter DeFazio

Federal Agencies
- U.S. Department of the Interior - Bureau of Land Management
  Vale District Office
  Oregon State Office
- U.S. Department of Agriculture - U.S. Forest Service
  Wallowa-Whitman National Forest
  Baker Ranger District
- U.S. Department of the Interior - U.S. Fish and Wildlife Service
  Portland, Oregon
- U.S. Department of Commerce - National Marine Fisheries Service
  Portland, Oregon
- U.S. Environmental Protection Agency
  Portland, Oregon
- U.S. Federal Energy Regulatory Commission
  Portland, Oregon

State and Local Government
- Idaho Department of Environmental Quality
- Oregon Department of Forestry
- Oregon Department of Fish and Wildlife
- Oregon Department of Transportation
- Oregon Department of Environmental Quality
- Oregon Water Resources Department
- Oregon Natural Heritage Program
- Oregon State Historic Preservation Officer
- Oregon State University
- University of Oregon
- Boise State University
- Washington Department of Natural Resources
- Washington Natural Heritage Program
- Baker County Commissioners
- Baker County Judge
- Baker County Planning Department
- Baker County Road Department
- Baker County Sheriff
- Baker County Visitors and Convention Bureau
- Baker County Water Resources Department

- Baker County Weed Control
- Baker Valley Irrigation District
- Burnt River Irrigation District
- Powder Basin Watershed Council
- Powder Valley Water Control District

Native American Indian Tribal governments
- Burns Paiute Tribe
- Confederated Tribes of the Umatilla Indian Reservation
- Nez Perce Tribe
- Shoshone-Paiute Tribes
- Confederated Tribes of the Warm Springs Reservation
- Shoshone-Bannock Tribes

Libraries
- Baker City Library
- Eastern Oregon State University Library

Organizations
- Blue Mountain Environmental Council
- Blue Mountain Native Forest Alliance
- Committee for Idaho's High Desert
- Eastern Oregon Mining Association
- Hells Canyon Preservation Council
- Northwest Timber Workers Resource Council
- Oregon Hunters Association
- Oregon Native Plant Society
- Oregon Natural Desert Association
- Oregon Natural Resources Council
- Oregon Trout
- Pacific Environmental Advocacy Center

Individuals and Corporations - will receive a copy of the DEIS if they respond affirmatively to the DEIS availability card -
- Agricultural Community Trust
- Alpine Timber Corp.
- Aprovecho Institute
- Ash Grove Cement Co.
- Baker City Herald
- Gary Bloomer
- Earnest H. Boege, Jr.
- Boise Cascade Corporation
- Dan Brassard
- Browning Logging, Inc.
- Frank D. Butchart, Jr.
- Geoffry & Talia Cheren
- Jack M. Corning
- Clear Pacific, Inc.
- Dan Rowland Logging
- Daly Creek Pastoral Co.
- Deer Flat Contracting
- Dodge Logging, Inc
- Eagle Valley Ag., Inc.
- Eberhard Logging
- Douglas W. Finch
- Alex & Lotti Finke
- Forest Recovery

- Forestry and Range Sciences Lab.
- Dan L. Forsea and Sons, Inc.
- Walter Forsea
- Frolander Logging, Inc.
- Jean Graham
- Great Wood Products
- Larry Hallam
- Hanel Lumber Co.
- Richard Harris
- Henderson Logging
- High Ridge Logging
- Don Hindman
- Fred C. Humphreys Trust
- Idaho Power Company
- J&J Logging
- Ken Jeter
- Silas A. Keith Estate, et al.
- Lazy S Over 7, Inc.
- Little Foot Construction
- Louisiana Pacific Corporation
- Malheur Lumber Company
- Malheur Timber Operators
- Neal F. Mishler
- Noble Lumber Co.
- Ochoco Lumber Co.
- Oregon Public Broadcasting
- O'Rorke Logging, Inc.
- Nell M. Owen
- John M. & Karen R. Patterson
- Chuck Phegley
- Berry Phelps
- Pioneer Logging
- Prairie Wood Products
- The Record-Courier
- RG Soft
- RY Timber, Inc.
- Gary Smith
- Snow Mountain Pine, Ltd.
- Frank Wilbur Smith Trust
- SRS Timber
- Joe E. & Janet Swisher
- Randy E. Williams
- WR2 Forest Products, Inc.

Appendix 4

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Appendix 5

Fisheries Analysis (text and tables)

LOOKOUT INTEGRATED RESOURCE ANALYSIS
FISHERIES ANALYSIS

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The purpose of this report is to document habitat conditions, concerns and opportunities pertinent to the Lookout Mountain Forest Health Analysis and project area. Included is the purpose and need for the project, the proposed action, a description of the current conditions in the affected environment, effects of the alternatives, and a cumulative effects assessment for fish habitat.

I. PURPOSE AND NEED

Proposed Action

The proposed action will include siviculture treatments and harvest of dead and dying trees, to restore this watershed to its full potential and the desired future condition. The major siviculture treatments will include commercial and pre-commercial thinning, and harvest improvement cuts. Harvest and thinning activities will be followed up with site preparation and planting, as needed. Fuel treatments will be used to reduce woody debris for future planting and natural propagation. Some road reconstruction will occur to access areas of treatment and to take care of drainage problems that exist. Temporary roads will be eliminated after use and other roads in the analysis area that are currently causing watershed problems may be eliminated. Proposed restoration may include large wood placements, installation of in-stream structures, grazing management changes, fencing of riparian areas, installation of water catchments, the development of springs, the propagation and planting of hardwood species, seeding, road closure devices and noxious weed treatments.

Project Description

The area proposed for treatment is located in T.11S., and 12 S., R.44 E., R.45 E., on the Bureau of Land Management land, approximately 40 air miles southeast of Baker City, Oregon, and 5 air miles, northeast of Durkee, Oregon. Lookout Mountain is a 7,120 ft. mountain at the north end of the analysis area. The ridge that forms from the mountain divides the drainages into two separate watersheds. The streams on the west side of the mountain flow into the Burnt River. The streams that flow from the east side of the mountain flow into the Snake River (Brownlee Reservoir). The headwaters of most of the perennial streams are at 5800-6000 feet elevation with most of the streams flowing into either the Snake River on the east or the Burnt River on the west, at approximately 2200 foot elevation.

Management Areas and Direction

The Baker Resource Management Plan (BMP) divides the resource area into geographic planning units and management areas. The Lookout Mountain project area is located in the Big Lookout Mountain Geographic Area. The geographic area has 23,502 acres of public land of which 4,450 acres are forest land. Of the forested land, approximately 3,200 acres is considered commercial timber and 1,250 are considered woodlands (aspen and juniper). The Baker Resource Management Plan (BMP, 1989) identified these other characteristics; 5 domestic grazing allotments, 6 major riparian areas (23 miles), 1 rainbow trout stream, wildlife (pronghorn antelope, Rocky Mountain elk, mule deer herds, and bighorn sheep).

The Baker Resource Management Plan (1989) created management direction for fisheries habitat. Direction is to "Maintain or enhance anadromous and resident fisheries; increase habitat productivity; and emphasize coordinated management with other agencies and landowners. Restore, maintain or enhance fish habitat on 155 miles of stream that have anadromous or resident fish or the potential to support fish."

The Baker Resource Management Plan assumed some impacts to water quality and fish habitat from on-going and proposed projects. The plan states Impacts to water quality are expected to be "Localized short-term increases in suspended sediment loads could be unavoidable from road construction and tractor logging under all alternatives.@ Impacts would be in proportion to the acres of timber harvested and miles of road constructed.

Impacts to fish habitat from "Forestry management activities, such as road construction and timber harvest, would increase stream siltation and produce localized, but extremely small effects on fish habitat.@

To develop the fish management alternatives for Alternatives 1-4, the Baker Resource Area has chosen to use the Inland Native Fish Strategy (INFISH, 1995).

We will use the direction in the form of riparian management objectives, standards and guidelines, and monitoring requirements developed for INFISH(USDA 1995). Riparian Management Objectives (RMO's) for stream channel conditions provide the criteria against which attainment or progress toward attainment of the riparian goals is measured (USDA 1995). The RMO's provide a target toward which managers aim as they conduct resource management activities. The RMO's have specific objectives for specific stream habitat features. Interim objectives have been set for these habitat features: pool frequency, water temperature, large woody debris, bank stability, lower bank angle and width/depth ratio.

Four categories of stream or water body widths, with specific direction, have been developed: Category 1-Fish-bearing streams, Category 2-Permanently flowing non-fish bearing streams, Category 3-Ponds, lakes, reservoirs, and wetlands greater than 1 acre, Category 4-Seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides, and land slide prone areas. Category 1 fish-bearing streams will have a buffer of 300 feet slope distance on both sides of the stream (600 feet total). Category 2 streams (perennial non fish-bearing) will have a buffer of 150 feet slope distance on both sides of the stream (300 feet total).Category 3 ponds, lakes, reservoirs and wetlands greater than 1 acre - will have a buffer of 150 feet slope distance from the edge of the maximum pool elevation or from the edge of the wetland, pond or lake, whichever is the greater. Category 4 seasonally flowing or intermittent streams, wetlands less than an acre, landslides, and landslide-prone areas - a buffer of 50 feet slope distance on both sides of the stream (100 feet total).

The ICBEMP Draft EIS suggest another interpretation of buffers which is primarily the same as INFISH and PACFISH. There are some minor differences for Category 4 streams (intermittent streams) in the buffer width. ICBEMP may or may not ever become adopted as part of management direction for the BLM. However, alternative 5 will have buffers created under this management document. The ICBEMP Supplemental Draft EIS clearly states the objectives and standards for RCA=s. The ICBEMP Supplemental Draft EIS suggests that RCA boundaries be decided in an Ecosystem Analysis at the Watershed Scale (EAWS). An EAWS has not been completed for the Lookout Mountain GU. In this case ICBEMP recommends the following RCA boundaries when an EAWS has not been completed.

Rangeland perennial and intermittent streams - the stream channel and the area on either side of the stream extending from the edges of the active channel to the extent of the flood prone width.

Forested perennial streams; and intermittent streams that support fish spawning and rearing - the stream channel and the area on either side of the stream extending from the edges of the active channel to a distance equal to the height of two site-potential trees (approximately 300 feet).

Forested intermittent streams that do not support fish - the stream channel and the area on either side of the stream extending from the edges of the active channel to a distance equal to the height of one site-potential trees (approximately 150 feet).

Ponds, lakes, reservoirs, and wetlands - the body of water or wetland and the area from the edge of the wetland, pond, or lake to the outer edges of riparian vegetation, or to the extent of seasonally saturated soil, or to distance equal to the height of one site-potential tree, whichever is greatest.

Issues for Watershed and Fisheries

Following are the factors that could cause siviculture treatments and road construction to detrimentally affect fish habitat with this project:

1. An increased sediment load from logging activities and road re-construction. An increase in sediment could eliminate fish habitat, reduce fish spawning habitat and egg production.

2. Continual loss of pool habitat could eliminate the success of the fish populations. Roading next to streams and sediment production from bare soil in the riparian areas are filling the pools with sediment.

3. The continual loss of vegetation (aquatic plants, sedges, hardwoods)in riparian habitat and streambank stability is

limiting production and survival of redband trout. To increase the vegetation in riparian areas and bank stabilization of the streams it may be necessary to limit activities within the riparian areas. This may require fencing and changes in range management.

4. Created openings may reduce the upland water storage and move up the timing of peak flows. If this occurred it may cause further stream entrenchment.

II. AFFECTED ENVIRONMENT

A. FISH HABITAT

The Snake River supported large runs of salmon and steelhead prior to dam construction on the Middle Snake River. All of the natural runs of fish were eliminated up the Powder River, the Burnt River and into Pine Valley (Gildemeister 1992) with the construction of Brownlee Reservoir in 1959, Oxbow in 1961 and Hells Canyon in 1968.

The Burnt River used to have anadromous fish runs in the river until the dams were constructed in the Snake River. Chinook salmon and steelhead used to migrate up the Burnt River until the Unity Reservoir was constructed in 1929. After the dams prevented anadromous fish migration there was still a good trout fishery in the Burnt River. In the 1920-30's the Burnt River had a good trout fishery with 20 inch fish not uncommon (Gildemeister 1992).

B. TES Fish

The Bureau of Land Management Resource Management Plan for the Baker Resource Area has listed the redband trout as sensitive and the US Fish and Wildlife lists the redband trout as a "Species of Concern".

Bull trout are listed as "Threatened" (ODFW 1998), but habitat conditions are not favorable for bull trout in the Burnt River watershed or in Brownlee Reservoir. They are probably extinct (Ratliff and Howell 1992). A (1990) survey by Oregon Department of Fish and Wildlife (ODFW) was completed in the Burnt River sub-basin on many of the streams in the watershed. Sampling during 1990 by field crews failed to locate any bull trout (Hooton 1993), but further surveys will continue as resources are available.

During early Oregon Department of Fish and Wildlife surveys all trout were identified as rainbow trout. New information and data collected on fish species has now indicated that there are two native species in most streams in Eastern Oregon. New surveys indicate that native redband trout are the dominate species of trout in our streams. As new surveys are conducted a higher percentage of redband trout are being distinguished from the rainbow trout. Rainbow trout may only exist in our streams due to the earlier stocking efforts by ODFW. Fish absence and presence surveys have not been completed for the streams in this watershed but it is presumed the majority of fish observed are native redband trout. There may be some rainbow trout at the confluences of fish-producing tributaries that have migrated upstream from the Burnt River. Habitat for the present fish species in this analysis area of redband and rainbow trout are discussed below.

C. FISH

1. RAINBOW TROUT

The rainbow trout represents resident fish and their habitat requirements that favor spawning and rearing of smolt. Primary factors concerning rainbow trout habitat include water temperature, water quality, timing and quantity of peak stream flows, and physical stream and riparian habitat characteristics. Rainbow trout ideally require stream temperatures of 2.2 - 20.0 degrees C (36 - 68 degrees F) for proper spawning and egg development to occur.

Good water quality is essential for migration, spawning and rearing habitat. Water should have a high concentration of dissolved oxygen and low turbidity. The oxygen level recommended for spawning fish (at least 80 percent saturation, with temporary levels no more than 5.0 mg/1) should provide the oxygen needs of migrating fish (Reiser and Bjorn 1979). Rainbow trout require a minimum water depth of .18 meters (7.211) and streamflow velocity of 48-91 cubic meters/second (Cm/s) in .6-5.2 cm substrate for successful spawning. For successful migration rainbow trout require a minimum water depth of .12 meters and a maximum velocity of 1.22 meters/second. Rainbow trout can survive in water between 33 and 70 degrees F., but grow most rapidly in water that is 50-65 degrees F. and are less susceptible to parasites and diseases at these temperatures. Trout may survive a few hours of exposure to high surface temperatures if

they can retreat to cooler, deeper waters.

Rainbow trout spawning occurs after spring runoff, when water flow is still high and stream temperatures are normal (<50 degrees F.). The eggs and young of rainbow trout can be destroyed by scouring and siltation of the redd, resulting in oxygen depletion.

The rearing period for rainbow trout extends from fry emergence to their first spawning in 2-3 years. Rainbow trout smolts rear in the fresh water streams for an average of two years before they are capable of spawning. Some wild fish do not spawn until they are age 5 and some hatchery fish will spawn in their first year. Many strains of hatchery fish never spawn in the wild. Most native rainbow trout will successfully spawn for at least five years before they quit breeding or die. The quality and quantity of the habitat sets the limits on the number of fish that can be produced (Reiser and Bjornn 1979).

2. REDBAND TROUT

The entire group of redband/rainbow trout have been recently classified into the rainbow grouping Oncorhynchus mykiss gibbsi. Redband/rainbow trout is the interior (inland) rainbow trout which can be differentiated from the coastal rainbow both electrophoretically and by meristic character differences such as the very fine scales and extra row of teeth on the tongue. The redband/rainbow's coloration is highly variable, most often there is a brick red coloring around the lateral line and dark colored parr marks (spots). The rainbow trout has a rainbow color around the lateral line and light colored parr marks. Spawning behavior appears to be most similar to that of rainbow and golden trout. All are spring spawners and require gravel riffles in which the female excavates a redd. Redband/rainbow trout have been listed as a sensitive species because their populations have diminished from historical levels.

Redband/rainbow are similar to brook trout (Salvelinus fontinalis) in that both are assumed to require relatively the same food, space, cover, and individual territories that are afforded by the riffles and small pools of headwater streams (Bacon et al. 1980). The redband/rainbow appears to tolerate higher siltation conditions and select lower water velocity situations than typical for most trout.

The redband/rainbow trout appear to be more tolerant of high water temperatures than other salmonids. Some redband/rainbow populations in the desert basins of Southeast Oregon have adapted to very high water temperatures through a survival mechanism and are known to inhabit intermittent, stagnant streams with temperatures as high as 83 degrees F. (Behnke 1979).

They once inhabited the entire upper Columbia River system, areas of British Columbia and Northern California (Lusch 1985). Behnke (1979) suggests that the redband/rainbow trout was originally native throughout the interior reaches of the Columbia River basin except where blocked by major falls, to lakes existing in the present Oregon basins.

Introductions of hatchery rainbow trout and subsequent hybridization have largely eliminated pure redband trout populations in much of their original range (Bacon, Brouha, Rode, Staley 1980). Now the redband/rainbow is found only in isolated sections of their historical habitat.

Currens (1991) looked at the genetic variation within and among populations of redband/rainbow trout in the Burnt and Powder Rivers. The population from the Burnt River system showed consistent genetic characteristics of inland redband/rainbow trout of the Columbia and Snake River. There were local population differences among the two populations tested in the Burnt River. Curren (1991) concluded that the Burnt River populations are inland redband/rainbow trout.

D. OTHER HABITATS

Within the planning area, other habitat types are found. These include: rocky outcroppings and cliffs, scabrock flats, ponds, springs, seeps and wet meadows.

III. CURRENT CONDITION

A. FISH HABITAT

1. WATERSHEDS

Streams in this analysis area flow into three different watersheds, the Burnt River, Snake River and Powder River. Tributaries to the Burnt River flow from the west side of Lookout Mountain. Tributaries to the Snake River flow from the east side of Lookout Mountain and tributaries from the north flow into the Powder River.

BURNT RIVER TRIBUTARIES

The Burnt River is a tributary to the Snake River. Historically, the Burnt River supported native runs of steelhead and chinook salmon. Construction of the dams has eliminated the natural flow of water in the Burnt River. There is no passage for fish. Water is controlled by the dams and most of the rest of the Burnt River is diverted for agricultural purposes. The Burnt River is on the DEQ 303 list for stream temperature, sediment and contaminents. Much of the main river has completely lost the ability to provide adequate fish habitat for any of the native trout species or other cold-water fish or aquatic species.

This analysis area includes tributaries that flow into the Burnt River just upstream of where the Burnt River flows into the Snake River. These tributaries are the last sub-watersheds on the north side of the river before the confluence with the Snake River. Perennial tributaries from the Lookout Mountain area that flow into the Burnt River include: Pole Gulch, Spring Gulch, Sisley Creek, Gold Creek, and Dry Creek. Of these perennial streams, Sisley Creek is the only fish -bearing stream in the analysis area.

SNAKE RIVER TRIBUTARIES

This analysis area includes tributaries that flow into the Snake River (Brownlee Reservoir). These tributaries flow into the Snake River above the Brownlee Dam The Snake River is not natural in this area. It is backed up by the three dams which impede all native anadromous fish from migrating upstream. The control of the Snake River by the three dams prevents the natural stream channel from occurring. Instead there is one large reservoir (lake) that is now this portion of the Snake River. Perennial tributaries from the Lookout Mountain area that flow into the Snake River include: Hibbard Creek, Fox Creek, Conner Creek, Douglas Creek, Magpie Gulch, Little Deacon Creek, Soda Creek, and Snake Tributary #1. Of these perennial streams, Hibbard, Fox and Conner Creeks are the only known fish -bearing streams in the analysis area.

Streamflow is dependent on: the amount of snow deposited in the watershed, the ability of the watershed to capture and hold snow, and the ability for springs, bogs and wet meadows to store water and supply water during summer months.

The watershed has a reduced ability to capture and hold snow due to natural geology and previous land management. Large openings promote a larger percentage of the snow releasing at one time and much earlier than normal. This is evident when you look at the down-cutting that is occurring in portions of the high-gradient streams. The occasional isolated short-duration high-intensity thunderstorms produce large volumes of water run-off which compounds the existing condition by increasing down-cutting and sediment transport into perennial streams.

POWDER RIVER TRIBUTARIES

The Powder River is a tributary to the Snake River. Historically, the Powder River supported native runs of steelhead and chinook salmon. Construction of the dams has eliminated the natural flow of water in the Powder River. There is no passage for fish at the dams. Water in this portion of the Powder River is backed up by the controls on the Brownlee Reservoir. The Powder River is on the DEQ 303 list for stream temperature, sediment and contaminents. Much of the main river has completely lost the ability to provide adequate fish habitat for any of the native trout species or other cold-water fish or aquatic species.

This analysis area includes the Daly Creek tributaries that flow into the Powder River in the area of the Richland Pool, just upstream of where the Powder River flows into the Snake River. The Daly Creek sub-watershed is on the south side of the river before the confluence with the Snake River. Daly Creek is the only perennial tributary from the Lookout Mountain area that flows into the Powder River.

2. STREAM SUMMARIES WITHIN EACH WATERSHED

A. BURNT RIVER WATERSHED TRIBUTARIES

MORGAN CREEK

PFC Survey (1998) The condition of riparian areas were evaluated in year 1998 and 1999 using BLM=s Proper Functioning Condition (PFC) evaluation procedures. One reach of Morgan Creek within an existing exclosure was rated as being in Aproper functioning condition@. One reach of Morgan Creek and all of Deafy Creek were rated as Afunctional-at risk@, and Heiney Creek was rated Anon-functional@. Porcupine Creek has not been rated. Outside of the aforementioned exclosure, most desirable riparian species components have been eliminated or reduced to remnant or widely scattered fragments incapable of holding soils and streambanks during high flow events. Lack of vegetative cover has contributed to high stream temperatures (7-day maximum was 73.2 degrees F in year 2000).

POLE GULCH

PFC Survey (1998) - The stream was rated as functional-at-risk-downward trend (FARD).The perennial stream is a Rosgen type A channel. The stream channel is incised 8-10 feet in the lower half of the drainage. The incised channel promotes more channelization, no floodplain development, loss of riparian vegetation and no development of wetlands. There are few mature riparian species. At least 60 % of the drainage does not contain desired riparian herbaceous plants. Over two-thirds of the channel is incised and there is no floodplain. Most of the area has bare soil at the edge of the stream. This stream is producing sediment downstream. There is nothing in the channel to slow water down or to promote natural flooding.

SPRING GULCH 1 - upper headwaters

PFC survey (1998) - The stream was rated as Proper Functioning Condition (PFC). The perennial stream is a Rosgen type A channel. The width/depth ratio is in balance. The riparian zone is limited by physical factors and limits the amount of floodplain and vegetation production. There are very few hardwoods but the herbaceous plants have good development. The stream is stable and has no eroding streambanks.

SPRING GULCH 2 - lower stream that flows into Burnt River

PFC Survey (1998) - The stream was rated as functional-at-risk-downward trend (FARD).The perennial stream is a Rosgen type A channel. The stream channel is incised 3-4 feet in the lower half of the drainage. The incised channel promotes more channelization, no floodplain development, loss of riparian vegetation and no development of wetlands. There are very limited herbaceous species and hardwoods. Most of the area has bare soil at the edge of the stream. This stream is producing sediment downstream. The stream does not have adequate vegetative cover to protect the streambanks or dissipate energy. There is nothing in the channel to slow water down or to promote natural flooding.

SISLEY CREEK

PFC Survey (1998) - The stream was rated as functional-at-risk-downward trend (FARD).The perennial stream is a Rosgen type B channel. The stream channel has good sinuosity and width/depth ratio in most areas. In several areas the channel is wider than it should be. This section of Sisley Creek has a wide floodplain. The riparian area has been grazed and timber removal has occurred. There is no wood in the channel or riparian area. There are several stands of mature aspens but the clone is dying and there is no successful reproduction. The herbaceous component is present and appears to be re-establishing some of the streambanks and wetlands. The streambanks could start eroding due to the missing large wood and adequate aquatic vegetation. There is some evidence of eroding streambanks and cutting within the channel. This stream with a lower gradient and a wide floodplain has the highest potential for full restoration of the stream channel and riparian area

GOLD CREEK

PFC Survey (1998) - The stream was rated as functional-at-risk-downward trend (FARD).The perennial stream is a Rosgen type B channel and has several substantial springs associated with the headwaters of this stream. The stream channel has good sinuosity and width/depth ratio. The road encroaches on the riparian area. Most of the hardwoods in this area are Aspen. Many of the trees are diseased and are dying. There are some areas of bare soil. Over-grazing was evident with limited production on herbaceous and hardwoods. There is some large wood in the channel but most of the channel has no large wood. There is some widening of the stream channel by livestock trampling at the streambank. This section of Gold Creek has a wide floodplain.

DRY CREEK

PFC Survey (1998) - The stream was rated as functional-at-risk-not apparent trend (FARN).The perennial stream is a Rosgen type A channel. The sinuosity and width/depth ratio are in balance. The riparian zone is naturally confined by the natural geology. The riparian-wetland vegetation is mostly mature. There is almost no new or young`reproduction. The riparian area and production has limited by the mining and roads to the mining. The upper headwaters are quite stable and vegetation is adequate but downstream the stream channel becomes unstable and has less vegetation. Production of sediment from unstable streambanks is occurring in the lower half of the stream channel. The stream does not have adequate vegetative cover to protect the streambanks or dissipate energy. There is nothing in the channel to slow water down or to promote natural flooding.

B. SNAKE RIVER WATERSHED TRIBUTARIES

HIBBARD CREEK -1 headwaters -roadless

PFC survey (1998) - The stream was rated as Proper Functioning Condition (PFC). The perennial stream is a Rosgen type A channel. The width/depth ratio is in balance. The riparian zone is limited by physical factors and limits the amount of floodplain and vegetation production. There is good hardwood production and the herbaceous plants have good development. There are several large, well developed springs in the upper headwaters. Vegetation is near 100% surrounding the springs. The stream is stable and has no eroding streambanks. The break of this segment is the road that crosses the creek. The stream flows over the road which under certain high flows has caused damage to the road and to the stream channel.

HIBBARD CREEK -2 main channel

PFC Survey (1998) - The stream was rated as functional-at-risk-downward trend (FARD).The perennial stream is a Rosgen type A channel. The stream channel is incised in most places down to bedrock. The incised channel promotes more channelization, no floodplain development, loss of riparian vegetation and no development of wetlands. The width depth ratio is out of balance with continually down-cutting and widening. The road dissects the riparian area and has several springs that cross the road and flow down the road for some distance before there is an area for water to flow off the road. There are no culverts or road ditching to manage the water flows. There are steep slopes on the west side of the creek which is well vegetated. Springs, bogs and small ephemeral channels on the west side contribute flow to Hibbard creek. Over-utilization of the herbaceous vegetation and hardwoods acts to increase the runoff. Reproduction of hardwoods is very poor. There are overly-mature hardwoods with absolutely no reproduction of young occurring. There is not adequate vegetation to protect the streambanks from eroding. On the east side of the creek most of the hardwood vegetation is gone, possibly due to road construction. Reproduction is very low and bare soil is evident throughout the reach. Large wood is missing from the riparian area and in the channel. Salt blocks were placed net to the stream which promotes more use of the riparian area and the stream channel. Cows were still utilizing the area late in the fall when there was almost no vegetation available.

HIBBARD CREEK -3 tributary

PFC Survey (1998) - The stream was rated as functional-at-risk-downward trend (FARD).The perennial stream is a Rosgen type A channel. The stream channel is incised in most places at least a foot in depth. The incised channel promotes more channelization, no floodplain development, loss of riparian vegetation and no development of wetlands. The width depth ratio is out of balance with continually down-cutting and widening. The road bisects the riparian area and has several springs that cross the road and flow down the road for some distance before there is an area for water to flow off the road. There are no culverts or road ditching to manage the water flows. There are steep slopes on the south side of the creek which is well vegetated. Springs, bogs and small ephemeral channels on the south side contribute flow to Hibbard creek. Over-utilization of the herbaceous vegetation and hardwoods acts to increase the runoff. The herbaceous vegetation is mostly Kentucky blue-grass. Reproduction of hardwoods is very poor. There are overly-mature hardwoods with absolutely no reproduction of young occurring. There is not adequate native vegetation to protect the streambanks from eroding. There is at least 40 % bare soil in the immediate floodplain and riparian area. Many of the plants this year had been consumed by a large infestation of grasshoppers. For unknown reasons the stream is somewhat stable even though there is so much bare soil. Would expect deeper stream channel cutting under this type of condition. On the north side of the creek most of the hardwood vegetation is gone, possibly due to road construction. Large wood is missing from the riparian area and in the channel. Cows were still utilizing the area late in the fall when there was almost no vegetation available.

FOX CREEK -1 upper headwaters

PFC Survey (1998) - The stream was rated as functional-at-risk-downward trend (FARD).The perennial stream is a Rosgen type B channel. This portion of survey is representative of the upper headwaters and upper most part of the stream before it flows through the steep canyon. The stream channel has poor sinuosity and width/depth ratio. In several areas the channel is wider than it should be. The riparian areas and associated wetlands are de-watered from over-grazing. The hardwoods (mostly aspen) and conifers production is good in uplands and does con contribute to the riparian-wetland degradation. Reproduction of the hardwoods is low and the condition of the aspens in this area appear in poor condition. There is approximately 20% bare soil adjacent to the stream channel. There are some rushes and sedges and basin wild rye that help hold the channel together. There is some large wood in the channel and riparian areas but limited reproduction of hardwoods and conifers will prevent maintenance and recovery. Large stream flows could erode streambanks and widen the channel. The loss of streambank stability and bare soil promotes erosion and sediment production. The lack of root-holding native vegetation is also promoting the instability of the channel. It is evident that over-grazing has reduced the this upper stream segments riparian and wetland vegetation. This is limiting the production of native vegetation and limiting the streams capacity to restore its self. Utilization of the native plants needs to be reduced so seed production can occur. It is important for restoration of the stream hat grazing be eliminated in the fall.

FOX CREEK - 2

PFC Survey (1998) - The stream was rated as functional-at-risk-downward trend (FARD).The perennial stream is a Rosgen type A channel. This portion of is 25% on BLM managed land and 75% on private land. The stream flows through a steep canyon that prevents a large floodplain or riparian development. There is almost no young reproduction of hardwoods. Most hardwoods are mature. There is a high composition of rock in the channel and immediate floodplain that limits the production of herbaceous vegetation. Vegetation does exist where the channel gradient allows. The rock/boulder component creates the channel stability. This system is not dependent on large wood. The hardwoods have limited reproduction. There are no over-flow channels or point bars due to the geology. Herbaceous vegetation could be increased, especially in areas where there is adequate floodplain. It is evident that the wider riparian areas are being over-utilized, which is limiting reproduction. As the floodplain widens near the entrance into the Snake River the amount of bare soil and limited reproduction is evident.

CONNER CREEK -1 upper headwaters

PFC Survey (1998) - The stream was rated as functional-at-risk-downward trend (FARD).The perennial stream is a Rosgen type A channel. This portion of survey is representative of the upper headwaters and upper most part of the stream before it flows through the steep canyon. The stream channel has poor sinuosity and width/depth ratio. The stream channel is incised and is down-cutting. The riparian areas and associated wetlands are de-watered from over-grazing. Bare soil in the immediate floodplain is 100% in several areas. Young reproduction of hardwoods and conifers have been consumed down to the ground. Aquatic plants along the edge of the stream are almost absent. Kentucky blue-grass is the prominent herbaceous plant. There is not adequate vegetation to protect streambanks or to dissipate energy. There is some large wood in the channel but the channel is down-cutting and incised. There is prior evidence the channel could continue to down-cut to bedrock as has occurred downstream in the past. This creates conditions that eliminates over-land flows, maintenance of the riparian vegetation, wetlands and channel stability.. When this occurs the aquatic vegetation is eliminated and dryland vegetation develops. This steam is very vulnerable to the loss of more habitat, down-cutting, loss of aquatic vegetation and stream habitat for fish from natural high stream flows. This stream will continue to produce downstream sediment and continue in a downward trend, unless grazing is eliminated from this area for 5-10years. The road to this area should be closed as it causing resource damage by eliminating wetlands, riparian areas, springs and bogs. All areas where the channel crosses the road should be rehabilitated and then the road should permanently be closed and seeded with native seed.

CONNER CREEK -2

PFC survey (1998) - The stream was rated as Functional-at-risk, upward trend (FARU). The perennial stream is a Rosgen type A channel. The width/depth ratio is in balance. The riparian zone has achieved potential extent but could be in better condition. Approximately 90% of this reach is within BLM managed land and the remainder is privately owned. The natural geology limits the amount of floodplain and vegetation production. The upper canyon has limited vegetation capability due to the natural limestone deposit. The limestone limits the quantity of hardwoods and herbaceous plants. Root-holding aquatic vegetation is limited in the lower stream channel as the limestone deposit decreases. Streambanks

are stable where there is vegetation present to protect streambanks and dissipate energy. The exception is the limestone areas where the flow of water constantly changes the shape of the stream channel by natural weathering events.

DOUGLAS CREEK

PFC Survey (1998) - The stream was rated as functional-at-risk-not apparent trend (FARN).The perennial stream is a Rosgen type A channel. Douglas Creek is entirely on BLM managed land except at the confluence with the Snake River, which is privately owned for approximately 500-700 feet. The stream is approximately 2 miles long. The stream channel is incised 4-6 feet in the lower half of the stream. There is a dirt road that is affecting the stream channel in the lower half mile. The upper portion of the stream has limited riparian vegetation due to natural physical constraints of the geology. The sinuosity and width/depth ratio are in balance in the upper reach. Hardwoods and herbaceous vegetation production is limited. Most of the hardwoods are mature with no young reproduction. There is willow in the lower reach, where the channel is incised. There are almost no hardwoods in the lower reach. Where wetland areas have developed the plants exhibit high vigor. There is not adequate vegetative cover present to protect the streambanks and dissipate energy during high flows. The county road at the bottom of the stream may have caused the stream to re-grade causing the stream channel in this area to become more incised. The dirt road that is being used at the lower end of the channel should be closed so vegetation can be re-established.

MAGPIE GULCH

PFC survey (1998) - The stream was rated as Proper Functioning Condition (PFC). The perennial stream is a Rosgen type A channel. Magpie Gulch is approximately .50 mile long . Approximately .25 mile of the lower portion of the stream is located on BLM managed land. The width/depth ratio is in balance. The riparian zone is limited by physical factors and limits the amount of floodplain and vegetation production. There are very few hardwoods but the herbaceous plants have good development and age distribution. The stream is stable and has no eroding streambanks. The stream is dominated by herbaceous vegetation that has created adequate cover to protect the streambanks and dissipate energy. There is very little observable use of vegetation in the drainage.

LITTLE DEACON CREEK

PFC survey (1998) - The stream was rated as Proper Functioning Condition (PFC). The perennial stream is a Rosgen type A channel. The stream is approximately 1 mile long. Only the upper 40% of the stream channel is on BLM managed land. The lower 60% is privately owned. The sinuosity, width/depth ratio is in balance. The riparian zone is limited by physical factors and limits the amount of floodplain and vegetation production. There is good stand of aspen in the drainage that has a diverse age-class distribution. There are very few hardwoods but the herbaceous plants have good development and age distribution. The stream is stable and has no eroding streambanks. There are aspen and cottonwood in the drainage that should continue to be an adequate source of large wood to the system. The stream has created adequate cover to protect the streambanks and dissipate energy. There is little observable use of vegetation in the drainage.

SODA CREEK AND SODA LAKE

PFC survey (1998) - The stream was rated as Proper Functioning Condition (PFC). The perennial stream is a Rosgen type A channel. The main-stem of Soda Creek is entirely on private land. The tributary of Soda Creek that is managed on BLM land is the tributary that flows from Soda Lake. Soda Lake lies in a natural depression with a large rim around the east side. The way the lake is located prevents a continuous downstream flow to the Soda Creek tributary. When the lake is full in the spring and early summer is evident there is flow on the east side of the lake. As the water recedes the entrance to the stream becomes dried up. It was evident that the entrance to the creek, from the lake, has been purposely blocked to hold the lake water, most likely for grazing purposes. The stream is approximately 1 mile long. The upper 60% of the stream channel is on BLM managed land. The lower 40% is privately owned. The sinuosity, width/depth ratio is in balance. The riparian zone is limited by physical factors and limits the amount of floodplain and vegetation production. Springs and wetlands are associated with the upper headwaters. Hardwoods are well distributed throughout the drainage. They have good development and age distribution. The stream is stable and has no eroding streambanks. There are aspen and cottonwood in the drainage that should continue to be an adequate source of large wood to the system. The stream has created adequate cover to protect the streambanks and dissipate energy. There is little observable use of vegetation in the drainage.

SNAKE RIVER TRIBUTARY #1

PFC survey (1998) - The stream was rated as Proper Functioning Condition (PFC). The perennial stream is a Rosgen type A channel. The stream is approximately 1.25 mile long. The upper 60% of the stream channel is on BLM managed land. The lower 40% is privately owned. The sinuosity, width/depth ratio is in balance. The riparian zone is limited by physical factors and limits the amount of floodplain and vegetation production. The aspen, cottonwood, alder, chokecherry and willow and the herbaceous plants have good development and age distribution. The stream is stable and has no eroding streambanks. The aspen, alder and cottonwood in the drainage should continue to be an adequate source of large wood to the system. The stream has created adequate cover to protect the streambanks and dissipate energy. The stream has sedges and rushes at the edge of the stream channel, which creates stability. There is little observable use of vegetation in the drainage.

C. POWDER RIVER WATERSHED TRIBUTARY

DALY CREEK

PFC Survey (1999) The stream was rated as functional-at-risk-downward trend (FARD).The perennial stream is a Rosgen type B channel, that has de-graded to a AC@ channel in several places. This portion of survey is representative of the upper headwaters, that flows through a narrow canyon, before heading downstream, into a more open riparian zone. The stream channel has good sinuosity. The width/depth ratio is poor with the width 2 times the expected channel width. The riparian areas are being impacted by grazing. Eroding streambanks are evident in this area. Reproduction of hardwoods is low. There are very few sedges along the stream, almost no willow and alder. There is some reproduction of aspen but the cottonwood is old and decadent. The loss of streambank stability and bare soil promotes erosion and sediment production. The lack of root-holding native vegetation is also promoting the instability of the channel. It is evident that over-grazing has reduced the riparian and wetland vegetation. All streams in this sub-watershed contribute to 303 D listed river (Powder River)

Daly Creek has several substantial springs, wetlands that are well vegetated in the upper headwaters. Daly Creek has a high potential for recovery of riparian areas and the floodplain.

3. STREAM TEMPERATURES

The Burnt River and the Snake River have been exhibiting high stream temperatures for many years. Currently both rivers are on the Oregon State 303 (d) list for high stream temperatures. Early records from 1958-59 (ODFW records) shows the Burnt River had stream temperatures of 70-81 degrees F. from July through October.

4. STREAM SEDIMENT

Suspended and deposited sediment can adversely affect salmonid rearing habitat if present in excessive amounts. High levels of suspended solids may abrade and clog fish gills, reduce feeding, and cause fish to avoid some areas (Reiser and Bjornn 1979). Streams with silt loads averaging less than 25 mg/l can be expected to support good freshwater fisheries. State turbidity standards for Oregon are set at no more than 5 NTU (Nephelometric turbidity units) over background levels.

Biologists (Codone and Kelley 1961) suggest that indirect rather than direct effects of too much fine sediment damage fish populations. Indirect damage to the fish population by destruction of food supply, lowered egg or alevin survival, or changes in rearing habitat probably occurs long before the adult fish would be directly harmed.

Deposited sediment may reduce available summer rearing and winter holding habitat for fish (Bjornn et al. 1977). Experiments have shown a reduction in juvenile salmonid populations in direct proportion to the amount of pool volume lost to fine sediment.

Spawning bed materials also influence the development and emergence of fry. Permeability of the substrate (the ability of a material to transmit fluids) sets the range of subsurface water velocities (Wickett 1962). Low permeabilities result in reduced oxygen delivery to and metabolite removal from the eggs.

Successful fry emergence is hindered by excessive amounts of sand and silt in the gravel. Even though embryos may hatch and develop, survival will be poor if they cannot emerge (Koski 1966).

Many of the streams in this analysis area create sediment downstream to the Burnt River and the Snake River. For many years the Burnt River has been over-producing sediment that affects the complete life cycle of native cold water fish. For many years the condition of the river has been favoring warm water fish that can tolerate higher temperatures and low quality water vs. the native trout species that require cool, clean water. This is also true of the Snake River. The Snake River is no longer a free-flowing river but instead is impounded by three dams in this area. With no passage at any of the three dams there is no natural migration route for any fish species into the Snake River and its tributaries. The Brownlee Reservoir is a large sediment trap for all the upstream tributaries in Oregon (the Burnt River) and Idaho. That sediment has removed available spawning habitat and the success of egg survival for all cold water fish species.

Many of the streams in this analysis area will produce sediment naturally, even if they were in ideal condition. This is due to the steepness of many of the streams and the occurrence of high intensity thunder storms . These storms can produce high flows in a short time interval. It is very important that we manage these streams for quality riparian vegetation and stream stability because of these natural occurrences.

5. WATER QUALITY

The 1988 Oregon Statewide Assessment of Nonpoint Sources of Water Pollution qualified the Burnt River. The Burnt River is listed as having severe water quality conditions and pollution problems. The most commonly cited causes of beneficial use degradation were vegetation removal in the riparian area, thus removing the thermal protection for the streams, and creating surface erosion (DEQ 1988). The land uses most commonly cited in connection with these problems were livestock grazing, vegetation management, forestry related road construction and timber management.

DEQ (1998) has completed Oregon=s Final 1998 Water Quality Limited streams - 303 (d) List. The Burnt River is listed for flow modification, summer-PH, temperatures, Chlorophyll a, and flow modification. The Snake River (Brownlee reservoir) is listed for temperature and toxics.

B. FISH

The Burnt River and its tributaries support native runs of rainbow and redband trout. Historically, anadromous fish, native redband and rainbow trout species occupied the whole Burnt River basin. Dams built on the Snake River caused the loss of habitat of these fish species and blockage for the anadromous fish.

Bull trout have never been verified in the Burnt River system (Hooton 1993). This seems odd since surrounding sub-basins all contain populations of bull trout. An OSP game trooper recalls a bull trout in a creel during the late 1970's but that observation is unconfirmed. Sampling during the 1990 ODFW fisheries survey failed to locate any bull trout (Hooton 1993). An extensive survey needs to be conducted in this watershed to verify the existence or non-existence of bull trout.

Rainbow Trout- ODFW hasn't stocked rainbow trout for angling purposes in the Burnt River or its tributaries, since 1980. All stocks presently occupying tributaries of the Burnt River system are native redband trout. A fish sampling survey was conducted in 1990 on the Burnt River system by ODFW. The biologists conducted fish sampling on many streams in the Burnt River basin, with only one sample on the North Fork Burnt River. The samples indicate that reband/rainbow trout exist throughout the basin, and in most major tributaries to Burnt River, but not necessarily as the principal fish. Most habitat conditions favor the non-game fish.

Redband trout-The Burnt River and its tributaries historically supported redband/rainbow trout. Their historical population levels have been reduced with the loss of available habitat. Currens (1991) has confirmed that redband/rainbow trout are still present in the Burnt River system.

IV. EFFECTS OF THE ALTERNATIVES

A. NO ACTION ALTERNATIVE

The No-Action alternative has the opportunity to improve fish habitat, riparian areas, water quality and transportation. The No Action alternative gives guidance within the RMP to improve fish-bearing streams, riparian areas and water quality. The Morgan Creek watershed Plan allows for in-stream structures and riparian planting, as funding occurs. Other fish-bearing streams should improve riparian habitat. The new Standards and Guides will set specific goals and objectives in riparian areas. Utilization levels will help restore the riparian areas slowly over time.

Treatments to fir, aspen, juniper and mixed conifer sites would not occur. Diseased trees would continue to infect other trees and stands. The stands in the upper watersheds would loose cover, stability and shade. This could create additional down-cutting and loss of spring, wetland habitat contained within those stands.

The Morgan Creek and Lookout Mountain Road would be maintained annually. Other roads would have occasional maintenance and attention as needed.

1. ISSUES

Fish Habitat
Fish habitat would slowly improve as Standards and Guides are implemented. Large Woody Debris (LWD) would occur as dead trees fall into the stream. Streambanks and shade would be restored slowly over time as utilization standards are met. Sediment from down-cut streams would continue for an indefinite period of time until some large wood comes into the system or areas are stabilized by vegetation recovery. Production of sediment to the Burnt River, Powder River and Snake River would continue from existing streams with bare-soil streambanks and continual down-cutting. This area has a history of natural storm events that can create down-cutting. This will continue in many areas before restoration occurs. Shade loss may continue in some areas as aspen clones die-out and there is no hardwood replacement.

Riparian Areas
Riparian areas would improve slowly as Standards and Guides were implemented. Some riparian areas would continue to loose the water table and wetland habitat, as streams continue to down-cut. Bare soil streambanks would continue to erode in areas, widening the channel. This would cause the loss of riparian habitat.

Water Quality
Water quality is currently not maintained. The streams in the analysis area contribute sediment to the Burnt River, Powder River and the Snake River, listed on the 303 D list for sediment, temperature and toxins. Would expect streams will continue to down-cut and contribute sediment. Many will continue to be unstable, with no proposed restoration or emphasis to restore Riparian Conservation Areas.

Transportation
Roads will remain open that are currently causing sediment delivery to the fish bearing streams. Water quality will continue to be impacted by roads that are creating impacts to fish habitat, riparian areas and water quality.

2. MITIGATION
No actions are proposed . There is no mitigation.

3. CUMULATIVE EFFECTS
The No-Action alternative will over time restore a percentage of the streams that support fish, improve riparian habitat and water quality. There are some areas where the stream channels are severely down-cut or riparian areas are bare soil that will not be restored to their potential without restoration work. Many of the streams will continue to erode providing sediment into the larger rivers. Standards and Guides for the range allotments will start restoration of vegetation in many areas creating an upward trend. Without restoration it will take many years for the riparian areas and stream channels to become restored. Would expect these streams to continue to contribute sediment and warm water downstream into the rivers, until some of these channels stabilize.

ACTION ALTERNATIVES

ACTIONS COMMON TO ALL ACTION ALTERNATIVES

Juniper on Limestone Areas
There are areas within the Lookout Analysis area of exposed limestone bedrock with widely scattered juniper trees. These areas are very fragile and have little or no soil. There will be no action on these lands causing no effects to stream and riparian habitat.

Post-Fledgling Family Areas (PFA)
The PFA areas will protect goshawk nesting and fledgling areas. There will be no harvest in the nesting area and reduced harvest within bands of the nest-site. Specific guidelines will be used to create a diversity of habitat types for goshawks

and their prey.

Sisley Creek, a fish bearing perennial stream, is located within the PFA management area. Restoration projects have been identified for the stream that include: Large Woody Debris (LWD) placements, hardwood/sedge planting and the restoration of the aspen clones in the riparian areas. These restoration plans will not interfere with the PFA management. These projects will be managed to restore the stream and riparian areas while meeting goshawk habitat objectives.
Range Re-Vegetation Areas

Several areas along the Snake River have been identified for range burns to change the vegetation that currently exists. Annuals (cheatgrass) and noxious weeds monopolize the vegetation in most of the pastures below 5000 foot elevation. The majority of the annuals and the noxious weeds do not create good ground cover. The annuals do not create substantial root strength to hold soils in place. Burning, noxious weed treatments and seeding will promote the replacement by perennial plants and help prevent slope failure and sediment into the streams. The range burns are necessary to restore the lower watershed where impacts are occurring to streams. The annual plants do not have the root strength to create stable streambanks. Erosion is more prevalent, creating vertical streambanks and loss of the water table. Burning will occur outside of the immediate floodplain. Seeding will occur in the fall after the spring burns to create ground cover in the first year. This will help minimize sediment production to the streams. Placement of large woody debris prior to the burning will help rebuild existing down-cut streams and help re-build the riparian areas.

A. ALTERNATIVE 1

Alternative 1 emphasizes the removal of mistle-toe infected conifers, juniper treatments, prescribed fire, range burns, road treatments, large woody debris placement and riparian planting. This includes harvest of 2287 acres including: 120 acres PFA treatment, 437 acres mountain shrub treatment, 822 acres thin treatments, 304 acres thin-mistletoe treatment, 604 acres mistletoe treatments. In addition there are other treatments for this alternative which include: prescribed fire on 244 acres, juniper treatments on 642 acres, range burns on 1287 acres, the closing of 2.5 miles of existing road, and 11.4 miles of riparian/stream restoration.

Project Design Features for Timber Harvesting, Riparian Conservation Areas (RCA=s), Roads, Prescribed Burns, and Monitoring incorporate mitigations for the protection of water quality and stream/riparian areas. The project design features for the action alternatives describes the proposed restoration of large woody debris placements and hardwood /sedge planting. Proposed restoration for each stream is located in the table at the end of alternative 1 effects section.

1. ISSUES

Fish Habitat

Large Woody Debris (LWD) placements would occur on 10.7 miles of stream and hardwood/sedge planting on 0.7 miles. The restoration proposed will help promote pool habitat, increase shade, stabilize streambanks and reduce sediment production on 11.4 miles of existing fish habitat. This alternative proposes the least number of miles of restoration.

This alternative has the highest risk of creating additional impacts to fish habitat from harvest activities. This alternative proposes the most number of acres (604) for mistletoe treatments. The mistletoe treatments will remove most of the basal area in the stands. The low basal area remaining in these treated stands will create hydrologic effects that could create additional impacts to existing fish habitat.

This alternative has the most number of acres harvested by ground methods, which creates the risk for additional ground disturbance and soil compaction, as compared to the other action alternatives. Ground methodology will be used on 35% of the treated acres, cable on 17% and helicopter on 43%. Helicopter is the least impact, cable the second and ground removal as the highest impact.

This alternative proposes no treatments to aspen stands. This will promote shade loss to streams. Existing clones next to streams are in decline and without treatment the clones will continue to die-out. Shade will be reduced and the loss of trees will promote the reduction of streambank stability and loss of riparian/wetland habitat.

The proposed timing for the restoration activities is two years prior to any commercial harvest activities. This will promote the re-building of stream habitat prior to any harvest activities and help capture sediment during activities. This alternative provides for the least number of miles of restoration which will create the greatest potential for impacts to stream habitat, from harvest activities.

We would expect fish habitat to slowly improve as Standards and Guides for Range Management are implemented and restoration activities are implemented.

Riparian Areas
INFISH buffers in RCA=s will protect the riparian areas and fish habitat during harvest activities. Improvement should occur in riparian areas slowly as Standards and Guides for range management are implemented and restoration activities take place. This alternative proposes 11.4 miles of hardwood/aquatic planting. There are 405 acres of delayed-harvest proposed until riparian/stream restoration projects have been completed and the areas stabilized. This alternative proposes the most number of acres delayed for harvest.

Streams and riparian areas not designated for restoration would continue to erode. Bare soil streambanks would continue to erode, widening the channel. This would cause the loss of riparian habitat, the loss of the water table and wetland/riparian habitat.

Water Quality
This alternative creates the least amount of restoration for stream habitat which will promote the continuance of impacts occurring to water quality. Stream temperatures will be reduced over time as riparian areas re-vegetate. Sediment will be reduced over time as utilization standards are implemented for riparian areas. This alternative promotes the least number of miles of restoration. This will continue to promote the existing water quality problems in some streams. Some streams in the analysis area would continue to contribute sediment to the Burnt River, Powder River and the Snake River, listed on the 303 D list for sediment, temperature and toxins.

Prescribed burning will occur after harvest activities. This alternative proposes to burn 4836 acres, the second highest number of acres. This creates a risk that additional sediment may be produced in some streams. The soils in this analysis area are very shallow except where the highest densities of vegetation occur. Most soils are very erosive without good vegetative cover. The burning will create a risk that additional bare soil will be produced and sediment will enter the streams producing additional water quality problems.

Transportation
This alternative proposes to close 2.5 miles of existing roads that are creating water quality problems and impacts to the stream channels. There are 4.2 miles of proposed and proposed temporary roads for this alternative and 83.1 miles of open roads. This alternative is proposing the second lowest miles of road closed and the highest proposed roads, as compared to the other action alternatives. Roads that will not be improved (Conner and Hibbard) will continue to cause water quality problems from sediment. The roads in areas of springs and stream crossings will continue to erode away. Roads that will not be decommissioned (Upper Hibbard, Daly and Gold Creeks) will continue to create impacts to fish habitat, riparian areas and water quality.

2. MITIGATION

Buffers are designated on all streams to protect water quality and riparian vegetation. This alternative proposes LWD placements and riparian planting as mitigation. Large Woody Debris (LWD) would be placed in streams with down-cutting and unstable streambanks and riparian areas for 10.7 miles of stream. LWD would be used to capture sediment to start the restoration process before harvest activities occur. LWD placements would help restore: the water table, the stream channel, pool habitat, streambank stability and the riparian area.

Hardwood Planting is proposed for 11.4 miles of stream. The hardwoods (Alder, Aspen. Red-Ozier Dogwood, Willow, Cottonwood, etc.) would be planted to create streambank stability and shade to the stream. The specific streams where this alternative proposes mitigation is listed in the table at the end of this alternative section. LWD and Riparian planting is fully described under the proposed alternative.

3. CUMULATIVE EFFECTS
This proposed alternative will restore some stream habitat and create less impacts downstream than already exist. However this alternative does not address all the water quality impacts from roads nor does it propose to restore very many miles of stream. The proposed harvest activities have the highest potential to cause additional water quality problems while repairing some. There are some areas that will not be restored to their potential without restoration work. Many of the streams will continue to erode providing sediment into the larger rivers. Standards and Guides for the range allotments will start restoration of vegetation in many areas creating an upward trend over time. Without restoration on all

areas with water quality problems the existing conditions will take many years to become restored. This alternative will help restore some of the existing problems in riparian areas and streams but will not promote all fish bearing streams into an upward trend and improvement.

Alternative 1 Proposal and Effects Table

Alternative 1	Acres - % of total	Soil/Water Effects
Total Harvest Acres	2287 = 30%	
Mountain shrub treatment	437 = 20%	Mid affect = 10-15 basal area existing to 5 basal area after treatment
Aspen treatment		Mid affect = 10-15 basal area existing to 5 basal area after treatment
Thin treatment	822 = 38%	Minimal affect = 80+ basal area existing to 80-100 basal area after treatment
Thin mistletoe	304 = 14%	Minimal affect = 80+ basal area existing to 80-100 basal area after treatment
Thin-mistletoe-aspen		Minimal affect = 80+ basal area existing to 80-100 basal area after treatment
Mistletoe treatment	604 = 28%	Most affect = 60-80 basal area existing to 5 basal area after treatment
Mistletoe patch		Most affect = 60-80 basal area existing to 5 basal area after treatment
Helicopter % harvest	972 = 43%	Least negative affect to soils from methodology
cable	397 = 17%	Mid affect
ground	798 = 35%	most negative affect to soils
harvest acres delayed	405	acres delayed from harvest until stream stabilized
	Miles	
restoration miles	11.4	Total number of miles of all restoration for streams and riparian areas
roads decommissioned	2.5 miles	Roads causing water quality problems

PROPOSED RESTORATION FOR ALTERNATIVE 1

STREAM	LWD/RIP	RIP ONLY	NXWEED	SEED	LWD/RHCA
Gold Creek	0.49 m.				
Sisley Creek	0.83 m.				
Fox Creek	1.46 m.				
Hibbard Creek	2.12 m.				
Morgan Creek	1.57 m.				
Spring Gulch	1.98 m.				
Pole Gulch	1.99 m.				
Conner Creek	0.27 m.				
Daley Creek		0.72 m.			
TOTALS	10.71 M.	0.72 M.			

A. ALTERNATIVE 2

Alternative 2 emphasizes a diversified plan for harvest within the different vegetative types while protecting and restoring natural resources. Alternative 2 proposes the removal of mistle-toe infected conifers, mountain shrub treatments, aspen treatments, thinning, large woody debris placement, noxious weed treatments, seeding and treatments to aspen clones within RCA=s. Harvest treatments include: 120 acres in the PFA, 393 acres mountain shrub treatment, 179 acres aspen treatments, 447 acres thin treatments, 250 acres thin-mistletoe treatment, 125 acres thin mistletoe/aspen, 180 acres mistletoe treatments and 191 acres patch mistletoe treatments. In addition there are other treatments for this alternative which include: prescribed fire on 142 acres, juniper treatments on 595 acres, range burns on 1287 acres, the closing of 5.8 miles of existing road, and 47.4 miles of riparian/stream restoration.

Project Design Features for Timber Harvesting, Riparian Conservation Areas (RCA=s), Roads, Prescribed Burns, and Monitoring incorporate mitigations for the protection of water quality and stream/riparian areas. The project design features for the action alternatives describes the proposed restoration of large woody debris placements and hardwood /sedge planting. Proposed restoration for each stream is located in the table at the end of alternative 2 effects section.

1. ISSUES

Fish Habitat

Large Woody Debris (LWD) placements would occur on 16.2 miles of stream, hardwood/sedge planting on 13.8 miles, noxious weed treatments on 7.7 miles, seeding on 6.2 miles and treatments to promote aspen clone restoration in RCA=s on 2.5 miles. The restoration proposed will help promote pool habitat, increase shade, stabilize streambanks and reduce sediment production on 47.4 miles of existing fish habitat. Alternative 2, 4 and 5 propose the most number of miles of restoration.

This alternative has the risk of creating additional impacts to fish habitat from harvest activities. This alternative proposes the second highest number of acres (371) for mistletoe treatments. The mistletoe treatments will remove most of the basal area in the stands. The low basal area remaining in these treated stands will create hydrologic effects that could create additional impacts to existing fish habitat.

This alternative proposes 518 acres to be harvested by ground methods, which creates the risk for additional ground disturbance and soil compaction. This is second lowest acres harvested by ground methods, as compared to the other action alternatives. Ground methodology will be used on 27% of the treated acres, cable on 33% and helicopter on 33%. Helicopter is the least impact, cable the second and ground removal as the highest impact.

This alternative proposes to treat a few acres of aspen along Fox Creek, Hibbard Creek and Sisley Creek . These treatments will be to fell the fir into the stream for fish pool habitat from the existing aspen clone. The existing clone will be protected and replanted to create a sustainable stand of aspen over time. Shade, streambank stability, riparian/wetland habitat will increase over time, with this treatment.

The proposed timing for the restoration activities is two years prior to any commercial harvest activities. This will promote the re-building of stream habitat prior to any harvest activities and help capture sediment during activities. This alternative provides for the most number of miles of restoration which will create the greatest potential for mitigating impacts to stream habitat, from harvest activities.

We would expect fish habitat to slowly improve as Standards and Guides for Range Management are implemented and restoration activities are implemented.

Riparian Areas

INFISH buffers in RCA=s will protect the riparian areas and fish habitat during harvest activities. Improvement should occur in riparian areas slowly as Standards and Guides for range management are implemented and restoration activities take place. This alternative proposes 30 miles of hardwood/aquatic planting. There are 211 acres of delayed-harvest proposed until riparian/stream restoration projects have been completed and the areas stabilized. This alternative proposes the second lowest number of acres delayed for harvest.

Streams and riparian areas not designated for restoration would continue to erode. Bare soil streambanks would continue to erode, widening the channel. This would cause the loss of riparian habitat, the loss of the water table and wetland/riparian habitat.

Water Quality
This alternative creates the most amount of restoration for stream habitat . This will promote immediate restoration of existing water quality problems and prevent additional impacts. Stream temperatures in time will be reduced as riparian planting produces shade. Sediment will be reduced over time as utilization standards are implemented for riparian areas. LWD and riparian planting will help this to occur. This alternative promotes the most number of miles of restoration which will promote the improvement of existing water quality problems. Most streams in the analysis area would not continue to contribute sediment to the Burnt River, Powder River and the Snake River, listed on the 303 D list for sediment, temperature and toxins.

Prescribed burning will occur after harvest activities. This alternative proposes to burn 3968 acres, the third highest number of acres. This creates a risk that additional sediment may be produced in some streams. The soils in this analysis area are very shallow except where the highest densities of vegetation occur. Most soils are very erosive without good vegetative cover. The burning will create a risk that additional bare soil will be produced and sediment will enter the streams producing additional water quality problems.

Transportation
This alternative proposes to close 5.8 miles of existing roads that are creating water quality problems and impacts to the stream channels. There are 3.8 miles of proposed and proposed temporary roads for this alternative and 83.1 miles of open roads. This alternative is proposing the second highest miles of road closed and the second highest proposed roads and open roads as compared to the other action alternatives. This alternative proposes to improve Hibbard, Conner and Morgan Creek Roads that are currently causing water quality problems from sediment. In addition to those roads named in alternative 1 for de-commissioning, alternative 2 proposes to close the Hibbard to Fox Creek switch-back, Gold Creek, Daly Creek and the Snake River tributary roads. The closing of these roads will remove impacts to fish habitat, riparian areas and water quality.

2. MITIGATION

Buffers are designated on all streams to protect water quality and riparian vegetation. This alternative proposes Large Woody Debris (LWD) placements, hardwood/sedge planting, seeding, LWD treatments in RCA=s and noxious weed treatments. This would occur on 47.4 miles of stream. Large Woody Debris (LWD) would be placed in streams with down-cutting and unstable streambanks and riparian areas for 16.2 miles of stream. LWD would be used to capture sediment to start the restoration process before harvest activities occur. LWD placements would help restore: the water table, the stream channel, pool habitat, streambank stability and the riparian area.

Hardwood Planting is proposed for 30 miles of stream. The hardwoods (Alder, Aspen. Red-Ozier Dogwood, Willow, Cottonwood, etc.) would be planted to create streambank stability and shade to the stream. The table with proposed restoration for each stream is located at the end of alternative 2 effects section.

Seeding would occur in areas of bare soil identified during field surveys. These areas are either part of the immediate floodplain/ riparian area or areas near the floodplain that greatly influence the streams. These areas are unstable and are in most cases producing sediment to the stream. The areas will be protected until ground cover is well established. Alternative 2 proposes 6.2 miles of seeding.

Aspen treatments have been identified where aspen was historically the main hardwood component of the riparian vegetation. In several areas the fir and other conifer species have invaded the existing clone. To save the clone and to re-establish the shade and streambank stability we are proposing to treat 3.5 miles with this alternative.

Noxious Weed Treatments have been identified for treatment to help restore the riparian and floodplain vegetation. This alternative propose treatments on 7.7 miles. The treatments will be completed by hand with back-pack sprayers. All of the buffers and administrative procedures from the District Weed Plan will be followed.

3. CUMULATIVE EFFECTS

This proposed alternative will restore the most number of miles of stream habitat and create the least impacts from harvest activities downstream. This alternative does address all the water quality impacts from roads and proposes to close or improve those causing impacts to the streams. The proposed harvest activities have the third lowest potential to

cause additional water quality problems. There are some areas that will not be restored to their potential for many years. Some of the streams will continue to erode until large woody debris placements have occurred and riparian planting is well established. Standards and Guides for the range allotments will start restoration of vegetation in many areas creating an upward trend over time. This alternative addresses areas with water quality problems and prevents additional impacts downstream to the larger rivers. Would expect over time for most of these streams to become stable and not to contribute to existing water quality problems that currently exist.

Alternative 2 Proposal and Effects Table

Alternative 2	Acres - % of total	Soil/Water Effects
Total Harvest Acres	1885 = 25%	
Mountain shrub treatment	393 = 22%	Mid affect = 10-15 basal area existing to 5 basal area after treatment
Aspen treatment	179 = 10%	Mid affect = 10-15 basal area existing to 5 basal area after treatment
Thin treatment	447 = 25%	Minimal affect = 80+ basal area existing to 80-100 basal area after treatment
Thin mistletoe	250 =14%	Minimal affect = 80+ basal area existing to 80-100 basal area after treatment
Thin-mistletoe-aspen	125 = 7%	Minimal affect = 80+ basal area existing to 80-100 basal area after treatment
Mistletoe treatment	180 = 10%	Most affect = 60-80 basal area existing to 5 basal area after treatment
Mistletoe patch	191 = 11%	Most affect = 60-80 basal area existing to 5 basal area after treatment
Helicopter % harvest	613 = 33%	Least negative affect to soils from methodology
cable	631 = 33%	Mid affect
ground	518 = 27%	most negative affect to soils
harvest acres delayed	211	acres delayed from harvest until stream stabilized
	Miles	
restoration miles	47.4	Total number of miles of all restoration for streams and riparian areas
roads decommissioned	5.8 miles	Roads causing water quality problems

ALTERNATIVE 2

STREAM	LWD/RIP	RIP ONLY	NXWEED	SEED	LWD/RHCA
Quicksand Creek	1.09 m.	0.81 m.	1.03 m.	1.10 m.	
Canyon Creek	0.52 m.	0.58 m.	0.52 m.	0.52 m.	
Gold Creek	1.09 m				
Sisley Creek	1.31 m.	1.72 m.			1.11 m.
Conner Creek	2.06 m.	2.79 m.	2.42 m.	1.14 m.	
Fox Creek	1.83 m.	0.93 m.	1.14 m.	1.67 m.	1.11 m.
Magpie Gulch	0.47 m.		0.43 m.	0.47 m.	
Douglas Creek	0.99 m.	0.73 m.	0.99 m.		
Hibbard Creek	0.92 m.	0.48 m.	1.00 m.	1.30 m.	1.24 m.
Spring Gulch	1.98 m.	1.97 m.	0.16 m.		
Pole Gulch	2.41 m.	0.74 m.			
Morgan Creek	1.57 m.	1.94 m.			
Daley Creek		0.57 m.			
Boneyard Gulch		0.58 m.			
TOTALS	16.2 M.	13.8 M.	7.69 M.	6.2 M.	3.46 M.

ALTERNATIVE 3

Alternative 3 emphasizes treatments within aspen and fir stands to enhance aspen to historical levels. Alternative 3 proposes the removal of mistle-toe infected conifers in the immature and mature stands, mountain shrub treatments, aspen treatments, large woody debris placement, noxious weed treatments, seeding and treatments to aspen clones within RCA=s. Harvest treatments include: 120 acres in the PFA, 440 acres mountain shrub treatment, 223 acres aspen treatments, 1089 acres immature stand treatments, and 637 acres mature stand treatment. In addition there are other treatments for this alternative which include: prescribed fire on 211 acres, juniper treatments on 642 acres, range burns on 1287 acres, the closing of 2.1 miles of existing road, and 39.7 miles of riparian/stream restoration.

Project Design Features for Timber Harvesting, Riparian Conservation Areas (RCA=s), Roads, Prescribed Burns, and Monitoring incorporate mitigations for the protection of water quality and stream/riparian areas. The project design features for the action alternatives describes the proposed restoration of large woody debris placements and hardwood /sedge planting. Proposed restoration for each stream is located in the table at the end of alternative 3 effects section.

1. ISSUES

Fish Habitat

Large Woody Debris (LWD) placements would occur on 16.2 miles of stream, hardwood/sedge planting on 25.1 miles, noxious weed treatments on 0.9 miles, seeding on 11.2 miles and treatments to promote aspen clone restoration in RCA=s on 2.5 miles. The restoration proposed will help promote pool habitat, increase shade, stabilize streambanks and reduce sediment production on 39.7 miles of existing fish habitat. Alternative 3 proposes the second highest miles of restoration.

This alternative proposes the highest number of total acres (2509) harvested. Treatments in mistletoe stands have been changed to enhance the aspen. This alternative creates the least risk of creating additional impacts to fish habitat from harvest activities, for the number of acres proposed for harvest. Alternative 4 will also have minimal impacts to fish habitat from harvest, with fewer acres. All the treatments with this alternative will have minimal to mid effects to fish habitat and water quality. The basal area remaining in mature and immature stands, after treatment, shouldn=t create any new hydrologic effects to existing fish habitat. This alternative does propose the highest number of acres (663) treated in mountain shrub and aspen stands. The conifers removed will only slightly change the existing stand basal area. There should be minimal affects hydrologically.

This alternative proposes 787 acres to be harvested by ground methods, which creates the risk for additional ground disturbance and soil compaction. This is second highest acres harvested by ground methods, as compared to the other action alternatives. Ground methodology will be used on 33% of the treated acres, cable on 17% and helicopter on 50%. Helicopter is the least impact, cable the second and ground removal as the highest impact. Alternative 3 has the highest number of acres harvested by helicopter.

This alternative proposes to treat a few acres of aspen along Fox Creek, Hibbard Creek and Sisley Creek. These treatments will be to fell the fir into the stream for fish pool habitat from the existing aspen clone. The existing clone will be protected and replanted to create a sustainable stand of aspen over time. Shade, streambank stability, riparian/wetland habitat will increase over time, with this treatment.

The proposed timing for the restoration activities is two years prior to any commercial harvest activities. This will promote the re-building of stream habitat prior to any harvest activities and help capture sediment during activities. This alternative provides for the second highest number of miles of restoration which will create the greatest potential for mitigating impacts to stream habitat, from harvest activities.

We would expect fish habitat to slowly improve as Standards and Guides for Range Management are implemented and restoration activities are implemented.

Riparian Areas

INFISH buffers in RCA=s will protect the riparian areas and fish habitat during harvest activities. Improvement should occur in riparian areas slowly as Standards and Guides for range management are implemented and restoration activities take place. This alternative proposes 25 miles of hardwood/aquatic planting. There are 294 acres of delayed-harvest proposed until riparian/stream restoration projects have been completed and the areas stabilized. This alternative proposes the second highest number of acres delayed for harvest.

Streams and riparian areas not designated for restoration would continue to erode. Bare soil streambanks would continue to erode, widening the channel. This would cause the loss of riparian habitat, the loss of the water table and wetland/riparian habitat.

Water Quality

This alternative creates the second highest number of miles of restoration for stream habitat . This will promote immediate restoration of existing water quality problems and prevent additional impacts. Stream temperatures in time will be reduced as riparian planting produces shade. Sediment will be reduced over time as utilization standards are implemented for riparian areas. LWD and riparian planting will help this to occur. This alternative promotes the improvement of existing water quality problems. Most streams in the analysis area would not continue to contribute sediment to the Burnt River, Powder River and the Snake River, listed on the 303 D list for sediment, temperature and toxins.

Prescribed burning will occur after harvest activities. This alternative proposes to burn 5031 acres, the highest number of acres. This alternative creates a risk that additional sediment may be produced in some streams. The soils in this analysis area are very shallow except where the highest densities of vegetation occur. Most soils are very erosive without good vegetative cover. The burning will create a risk that additional bare soil will be produced and sediment will enter the streams producing additional water quality problems.

Transportation

This alternative proposes to close 2.1 miles of existing roads that are creating water quality problems and impacts to the stream channels. There are 2.1 miles of proposed and proposed temporary roads for this alternative and 83.1 miles of open roads. This alternative is proposing the least number of miles of roads closed. This alternative proposes to improve Hibbard, Conner and Morgan Creek Roads that are currently causing water quality problems from sediment. In addition to those roads named in alternative 1 for de-commissioning, alternative 3 proposes to close the Hibbard to Fox Creek switch-back, Gold Creek, Daly Creek and the Snake River tributary roads. The closing of these roads will remove impacts to fish habitat, riparian areas and water quality.

2. MITIGATION

Buffers are designated on all streams to protect water quality and riparian vegetation. This alternative proposes Large Woody Debris (LWD) placements, hardwood/sedge planting, seeding, LWD treatments in RCA=s and noxious weed treatments. This would occur on 39.7 miles of stream. Large Woody Debris (LWD) would be placed in streams with down-cutting and unstable streambanks and riparian areas for 16.2 miles of stream. LWD would be used to capture sediment to start the restoration process before harvest activities occur. LWD placements would help restore: the water table, the stream channel, pool habitat, streambank stability and the riparian area.

Hardwood Planting is proposed for 25 miles of stream. The hardwoods (Alder, Aspen. Red-Ozier Dogwood, Willow, Cottonwood, etc.) would be planted to create streambank stability and shade to the stream. The table with proposed restoration for each stream is located at the end of alternative 3 effects section.

Seeding would occur in areas of bare soil identified during field surveys. These areas are either part of the immediate floodplain/ riparian area or areas near the floodplain that greatly influence the streams. These areas are unstable and are in most cases producing sediment to the stream. The areas will be protected until ground cover is well established. Alternative 3 proposes the highest number of miles of seeding, 11.2 miles.

Aspen treatments have been identified where aspen was historically the main hardwood component of the riparian vegetation. In several areas the fir and other conifer species have invaded the existing clone. To save the clone and to re-establish the shade and streambank stability we are proposing to treat 2.5 miles with this alternative.

Minimal noxious weed treatments have been identified to help restore the riparian and floodplain vegetation. This alternative proposes treatments for only 0.9 miles. The treatments will be completed by hand with back-pack sprayers. All of the buffers and administrative procedures from the District Weed Plan will be followed.

3. CUMULATIVE EFFECTS

This proposed alternative will restore the second most number of miles of stream habitat and create the least impacts from harvest methodologies and harvest stand treatments. However, this alternative does not address all the water quality

impacts from roads. The proposed harvest activities have the lowest potential to cause additional water quality problems. Some of the streams will continue to erode until large woody debris placements have occurred and riparian planting is well established. Standards and Guides for the range allotments will start restoration of vegetation in many areas creating an upward trend over time. This alternative addresses most of the restoration needs to eliminate water quality problems and impacts downstream to the larger rivers. Would expect over time for most of these streams to become stable and not to contribute to existing water quality problems, that currently exist.
Alternative 3 Proposal and Effects Table

Alternative 3	Acres - % of total	Soil/Water Effects
Total Harvest Acres	2509 = 33%	
Mountain shrub treatment	440 = 18%	Mid affect = 10-15 basal area existing to 5 basal area after treatment
Aspen treatment	223 = 9%	Mid affect = 10-15 basal area existing to 5 basal area after treatment
Mature Stands	637 = 38%	Minimal affect = 80+ basal area existing to 80-100 basal area after treatment
Immature Stands	1089 = 46%	Mid affect = 80+ basal area existing to 60-80 basal area after treatment
Helicopter % harvest	1184 = 50%	Least negative affect to soils from methodology
cable	418 = 17%	Mid affect
ground	787 = 33%	most negative affect to soils
harvest acres delayed	294	acres delayed from harvest until stream stabilized
	Miles	
restoration miles	39.7	Total number of miles of all restoration for streams and riparian areas
roads decommissioned	2.1 miles	Roads causing water quality problems

ALTERNATIVE 3

STREAM	LWD/RIP	RIP ONLY	NXWEED	SEED	LWD/RHCA
Quicksand Creek	0.72m.	0.81 m.		0.72 m.	
Canyon Creek	0.52 m.	0.58 m.		0.52 m.	
Gold Creek	0.70 m				
Sisley Creek	1.12 m.			0.77 m.	0.36 m.
Conner Creek	0.27 m.	2.42 m.			
Fox Creek	2.98 m.		0.89 m.	1.71 m.	1.26 m.
Magpie Gulch	0.47 m.			0.47 m.	
Douglas Creek	0.99 m.	0.73 m.			
Hibbard Creek	2.42 m.			1.66 m.	0.90 m.
Spring Gulch	1.98 m.	.		1.98 m.	
Pole Gulch	1.99 m.	0.38 m.		1.76	
Morgan Creek	1.88 m.	3.04 m.		1.57	
Daley Creek					
Boneyard Gulch		0.56 m.			
TOTALS	16.2 M.	8.86 M.	0.89 M.	11.16 M.	2.52 M.

A. ALTERNATIVE 4

Alternative 4 emphasizes the enhancement of wildlife cover with minimal commercial treatments. This alternative protects and enhances effective cover in conifer and aspen stands for wildlife. Alternative 4 proposes the removal of mistle-toe infected conifers in isolated parcels and cover stands, mountain shrub treatments, aspen treatments, large woody debris placement, noxious weed treatments, seeding and treatments to aspen clones within RCA=s. Harvest treatments include: 120 acres in the PFA, 36 acres mountain shrub treatment, 191 acres aspen treatments, 154 acres in isolated parcels, 189 acres in stands with marginal cover and 104 acres in stands with satisfactory cover. In addition there are other treatments for this alternative which include: juniper treatments on 590 acres, range burns on 1287 acres, the closing of 10.7 miles of existing road, and 47.4 miles of riparian/stream restoration.

Project Design Features for Timber Harvesting, Riparian Conservation Areas (RCA=s), Roads, Prescribed Burns, and Monitoring incorporate mitigations for the protection of water quality and stream/riparian areas. The project design features for the action alternatives describes the proposed restoration of large woody debris placements and hardwood /sedge planting. Proposed restoration for each stream is located in the table at the end of alternative 4 effects section.

1. ISSUES

Fish Habitat

This alternative proposes the lowest number of total acres (773) harvested. Treatments in mistletoe stands have been changed to enhance wildlife. This alternative creates the least risk of creating additional impacts to fish habitat from harvest activities. All the treatments with this alternative will have minimal to mid effects to fish habitat and water quality. The basal area remaining in cover stands, after treatment, should create minimal hydrologic effects to existing fish habitat. This alternative proposes the lowest number of acres (226) treated in mountain shrub and aspen stands. The conifers removed will only slightly change the existing stand basal area. There should be minimal affects hydrologically.

This alternative proposes 132 acres to be harvested by ground methods, which creates the risk for additional ground disturbance and soil compaction. This is lowest acres harvested by ground methods, as compared to the other action alternatives. Ground methodology will be used on 42% of the treated acres, cable on 27% and helicopter on 31%. Helicopter is the least impact, cable the second and ground removal as the highest impact. Alternative 4 has the lowest number of acres (294) harvested by helicopter, but the fewest acres treated.

This alternative proposes to treat a few acres of aspen along Fox Creek, Hibbard Creek and Sisley Creek. These treatments will be to fell the fir into the stream for fish pool habitat from the existing aspen clone. The existing clone will be protected and replanted to create a sustainable stand of aspen over time. Shade, streambank stability, riparian/wetland habitat will increase over time, with this treatment.

The proposed timing for the restoration activities is two years prior to any commercial harvest activities. This will promote the re-building of stream habitat prior to any harvest activities and help capture sediment during activities. This alternative provides for the highest number of miles of restoration, as do alternative 2 and 5, which will create the greatest potential for mitigating impacts to stream habitat, from harvest activities.

We would expect fish habitat to slowly improve as Standards and Guides for Range Management are implemented and restoration activities are implemented.

Riparian Areas

INFISH buffers in RCA=s will protect the riparian areas and fish habitat during harvest activities. Improvement should occur in riparian areas slowly as Standards and Guides for range management are implemented and restoration activities take place. This alternative proposes 30 miles of hardwood/aquatic planting. There are 76 acres of delayed-harvest proposed until riparian/stream restoration projects have been completed and the areas stabilized. This alternative proposes the lowest number of acres delayed for harvest.

Streams and riparian areas not designated for restoration would continue to erode. Bare soil streambanks would continue to erode, widening the channel. This would cause the loss of riparian habitat, the loss of the water table and wetland/riparian habitat.

Water Quality

This alternative creates the highest number of miles of restoration for stream habitat. This will promote immediate

restoration of existing water quality problems and prevent additional impacts. Stream temperatures in time will be reduced as riparian planting produces shade. Sediment will be reduced over time as utilization standards are implemented for riparian areas. LWD and riparian planting will help this to occur. This alternative promotes the improvement of existing water quality problems. Most streams in the analysis area would not continue to contribute sediment to the Burnt River, Powder River and the Snake River, listed on the 303 D list for sediment, temperature and toxins.

Prescribed burning will occur after harvest activities. This alternative proposes to burn 2542 acres, the lowest number of acres. This alternative creates the least risk that additional sediment may be produced in some streams. The soils in this analysis area are very shallow except where the highest densities of vegetation occur. Most soils are very erosive without good vegetative cover. The burning will create a risk that additional bare soil will be produced and sediment will enter the streams producing additional water quality problems.

Transportation
This alternative proposes to close 10.7 miles of existing roads that are creating wildlife and water quality problems. There are no existing road improvements, no new roads or temporary roads proposed for this alternative. This alternative is proposing the most number of miles of roads closed. This alternative proposes no improvements for Conner and Morgan Creek Roads that are currently causing water quality problems. In addition to those roads named in alternative 1 for de-commissioning, alternative 4 proposes to close the Hibbard to Fox Creek switch-back, Hibbard Creek, the Snake River tributary roads and the Bassar Diggins road. The closing of these roads will remove some of the impacts to fish habitat, riparian areas and water quality. This alternative does not address the continual need for transportation in the analysis area, the Fox Creek road which is causing water quality problems or how to enforce proposed closed roads.

2. MITIGATION

Buffers are designated on all streams to protect water quality and riparian vegetation. This alternative proposes Large Woody Debris (LWD) placements, hardwood/sedge planting, seeding, LWD treatments in RCA=s and noxious weed treatments. This would occur on 47.4 miles of stream. Large Woody Debris (LWD) would be placed in streams with down-cutting and unstable streambanks and riparian areas for 16.2 miles of stream. LWD would be used to capture sediment to start the restoration process before harvest activities occur. LWD placements would help restore: the water table, the stream channel, pool habitat, streambank stability and the riparian area.

Hardwood Planting is proposed for 30 miles of stream. The hardwoods (Alder, Aspen. Red-Ozier Dogwood, Willow, Cottonwood, etc.) would be planted to create streambank stability and shade to the stream. The table with proposed restoration for each stream is located at the end of alternative 4 effects section.

Seeding would occur in areas of bare soil identified during field surveys. These areas are either part of the immediate floodplain/ riparian area or areas near the floodplain that greatly influence the streams. These areas are unstable and are in most cases producing sediment to the stream. The areas will be protected until ground cover is well established. Alternative 4 proposes 6.2 miles of seeding.

Aspen treatments have been identified where aspen was historically the main hardwood component of the riparian vegetation. In several areas the fir and other conifer species have invaded the existing clone. To save the clone and to re-establish the shade and streambank stability we are proposing to treat 3.5 miles with this alternative.

Noxious Weed Treatments have been identified for treatment to help restore the riparian and floodplain vegetation. This alternative propose treatments on 7.7 miles. The treatments will be completed by hand with back-pack sprayers. All of the buffers and administrative procedures from the District Weed Plan will be followed.

3. CUMULATIVE EFFECTS

This proposed alternative will restore the highest number of miles of stream habitat which will create less impacts downstream than already exist. This alternative does not address all the water quality impacts from roads or improve existing road problems. The proposed harvest activities have the lowest potential to cause additional water quality problems, due to the low number of acres harvested. Some of the streams will continue to erode until large woody debris placements have occurred and riparian planting is well established. Standards and Guides for the range allotments will start restoration of vegetation in many areas creating an upward trend over time. This alternative addresses most of the restoration needs to eliminate water quality problems and impacts downstream to the larger rivers. Would expect over

time for most of these streams to become stable and not to contribute to existing water quality problems, that currently exist. This alternative creates the least impact to the ground from all activities and promotes the most number of miles of restoration, but does not address the mistletoe infected trees nor the existing road problems well.

Alternative 4 Proposal and Effects Table

Alternative 4	Acres - % of total	Soil/Water Effects
Total Harvest Acres	773 = 10%	
Mountain shrub treatment	35 = 5%	Mid affect = 10-15 basal area existing to 5 basal area after treatment
Aspen treatment	191 = 29%	Mid affect = 10-15 basal area existing to 5 basal area after treatment
Isolated parcels	154 = 24%	Minimal affect = 100+basal area existing to 100-120 basal area after treatment
Satisfactory cover	104 = 16%	Minimal affect = thinned to 70% canopy cover
Marginal cover	169 = 26%	Mid affect = thinned to 40% canopy cover
Helicopter % harvest	294 = 45%	Least negative affect to soils from methodology
cable	232 = 36%	Mid affect
ground	132 = 20%	most negative affect to soils
harvest acres delayed	76	acres delayed from harvest until stream stabilized
	Miles	
restoration miles	47.4	Total number of miles of all restoration for streams and riparian areas
roads decommissioned	10.7 miles	Roads causing water quality problems

ALTERNATIVE 4

STREAM	LWD/RIP	RIP ONLY	NXWEED	SEED	LWD/RHCA
Quicksand Creek	1.09 m.	0.81 m.	1.03 m.	1.10 m.	
Canyon Creek	0.52 m.	0.58 m.	0.52 m.	0.52 m.	
Gold Creek	1.09 m				
Sisley Creek	1.31 m.	1.72 m.			1.11 m.
Conner Creek	2.06 m.	2.79 m.	2.42 m.	1.14 m.	
Fox Creek	1.83 m.	0.93 m.	1.14 m.	1.67 m.	1.11 m.
Magpie Gulch	0.47 m.		0.43 m.	0.47 m.	
Douglas Creek	0.99 m.	0.73 m.	0.99 m.		
Hibbard Creek	0.92 m.	0.48 m.	1.00 m.	1.30 m.	1.24 m.
Spring Gulch	1.98 m.	1.97 m.	0.16 m.		
Pole Gulch	2.41 m.	0.74 m.			
Morgan Creek	1.57 m.	1.94 m.			
Daley Creek		0.57 m.			
Boneyard Gulch		0.58 m.			
TOTALS	16.2 M.	13.8 M.	7.69 M.	6.2 M.	3.46 M.

A. ALTERNATIVE 5

This alternative was developed to comply with ICBEMP science for old forest guidelines and objectives and RCA buffers. Alternative 5 proposes the removal of mistle-toe infected conifers, mountain shrub treatments, aspen treatments, thinning, large woody debris placement, noxious weed treatments, seeding and treatments to aspen clones within RCA=s. Harvest treatments include: 120 acres in the PFA, 319 acres mountain shrub treatment, 148 acres aspen treatments, 516 acres thin treatments, 157 acres thin-mistletoe treatment, 92 acres thin mistletoe/aspen, 14 acres mistletoe treatments and 135 acres patch mistletoe treatments. In addition there are other treatments for this alternative which include: prescribed fire on 138 acres, juniper treatments on 518 acres, range burns on 1287 acres, the closing of 5.8 miles of existing road, and 47.4 miles of riparian/stream restoration.

Project Design Features for Timber Harvesting, Riparian Conservation Areas (RCA=s), Roads, Prescribed Burns, and Monitoring incorporate mitigations for the protection of water quality and stream/riparian areas. The project design features for the action alternatives describes the proposed restoration of large woody debris placements and hardwood /sedge planting. Proposed restoration for each stream is located in the table at the end of alternative 5 effects section.

1. ISSUES

Fish Habitat

Large Woody Debris (LWD) placements would occur on 16.2 miles of stream, hardwood/sedge planting on 13.8 miles, noxious weed treatments on 7.7 miles, seeding on 6.2 miles and treatments to promote aspen clone restoration in RCA=s on 2.5 miles. The restoration proposed will help promote pool habitat, increase shade, stabilize streambanks and reduce sediment production on 47.4 miles of existing fish habitat. This alternative along with alternative 2 and 4 propose the most number of miles of restoration.

This alternative has the risk of creating additional impacts to fish habitat from harvest activities. This alternative proposes the lowest number of acres (149) for mistletoe treatments. The mistletoe treatments will remove most of the basal area in the stands. The low basal area remaining in these treated stands will create hydrologic effects that could create additional impacts to existing fish habitat.

This alternative proposes 578 acres to be harvested by ground methods, which creates the risk for additional ground disturbance and soil compaction. This is the middle alternative for number of acres harvested by ground methods, as compared to the other action alternatives. Ground methodology will be used on 42% of the treated acres, cable on 27% and helicopter on 31%. Helicopter is the least impact, cable the second and ground removal as the highest impact.

This alternative proposes to treat a few acres of aspen along Fox Creek, Hibbard Creek and Sisley Creek . These treatments will be to fell the fir into the stream for fish pool habitat from the existing aspen clone. The existing clone will be protected and replanted to create a sustainable stand of aspen over time. Shade, streambank stability, riparian/wetland habitat will increase over time, with this treatment.

The proposed timing for the restoration activities is two years prior to any commercial harvest activities. This will promote the re-building of stream habitat prior to any harvest activities and help capture sediment during activities. This alternative provides for the most number of miles of restoration which will create the greatest potential for mitigating impacts to stream habitat, from harvest activities.

We would expect fish habitat to slowly improve as Standards and Guides for Range Management are implemented and restoration activities are implemented.

Riparian Areas

INFISH buffers in RCA=s will protect the riparian areas and fish habitat during harvest activities. Improvement should occur in riparian areas slowly as Standards and Guides for range management are implemented and restoration activities take place. This alternative proposes 30 miles of hardwood/aquatic planting. There are 211 acres of delayed-harvest proposed until riparian/stream restoration projects have been completed and the areas stabilized. This alternative proposes the second lowest number of acres delayed for harvest.

Streams and riparian areas not designated for restoration would continue to erode. Bare soil streambanks would continue to erode, widening the channel. This would cause the loss of riparian habitat, the loss of the water table and wetland/riparian habitat.

Water Quality
This alternative creates the most amount of restoration for stream habitat . This will promote immediate restoration of existing water quality problems and prevent additional impacts. Stream temperatures in time will be reduced as riparian planting produces shade. Sediment will be reduced over time as utilization standards are implemented for riparian areas. LWD and riparian planting will help this to occur. This alternative promotes the most number of miles of restoration which will promote the improvement of existing water quality problems. Most streams in the analysis area would not continue to contribute sediment to the Burnt River, Powder River and the Snake River, listed on the 303 D list for sediment, temperature and toxins.

Prescribed burning will occur after harvest activities. This alternative proposes to burn 3471 acres, the second lowest number of acres. This creates a risk that additional sediment may be produced in some streams. The soils in this analysis area are very shallow except where the highest densities of vegetation occur. Most soils are very erosive without good vegetative cover. The burning will create a risk that additional bare soil will be produced and sediment will enter the streams producing additional water quality problems.

Transportation
This alternative proposes to close 5.8 miles of existing roads that are creating water quality problems and impacts to the stream channels. There are 3.8 miles of proposed and proposed temporary roads for this alternative and 83.1 miles of open roads. This alternative is proposing the second highest miles of road closed. This alternative proposes to improve Hibbard, Conner and Morgan Creek Roads that are currently causing water quality problems from sediment. In addition to those roads named in alternative 1 for de-commissioning, alternative 5 proposes to close the Hibbard to Fox Creek switch-back, Gold Creek, Daly Creek and the Snake River tributary roads. The closing of these roads will remove impacts to fish habitat, riparian areas and water quality.

2. MITIGATION

Buffers are designated on all streams to protect water quality and riparian vegetation. This alternative proposes Large Woody Debris (LWD) placements, hardwood/sedge planting, seeding, LWD treatments in RCA=s and noxious weed treatments. This would occur on 47.4 miles of stream. Large Woody Debris (LWD) would be placed in streams with down-cutting and unstable streambanks and riparian areas for 16.2 miles of stream. LWD would be used to capture sediment to start the restoration process before harvest activities occur. LWD placements would help restore: the water table, the stream channel, pool habitat, streambank stability and the riparian area.

Hardwood Planting is proposed for 30 miles of stream. The hardwoods (Alder, Aspen. Red-Ozier Dogwood, Willow, Cottonwood, etc.) would be planted to create streambank stability and shade to the stream. The table with proposed restoration for each stream is located at the end of alternative 5 effects section.

Seeding would occur in areas of bare soil identified during field surveys. These areas are either part of the immediate floodplain/ riparian area or areas near the floodplain that greatly influence the streams. These areas are unstable and are in most cases producing sediment to the stream. The areas will be protected until ground cover is well established. Alternative 5 proposes 6.2 miles of seeding.

Aspen treatments have been identified where aspen was historically the main hardwood component of the riparian vegetation. In several areas the fir and other conifer species have invaded the existing clone. To save the clone and to re-establish the shade and streambank stability we are proposing to treat 3.5 miles with this alternative.

Noxious Weed Treatments have been identified for treatment to help restore the riparian and floodplain vegetation. This alternative propose treatments on 7.7 miles. The treatments will be completed by hand with back-pack sprayers. All of the buffers and administrative procedures from the District Weed Plan will be followed.

3. CUMULATIVE EFFECTS

This proposed alternative will restore the most number of miles of stream habitat and create the least impacts from harvest activities downstream. This alternative does address all the water quality impacts from roads and proposes to close or improve those causing impacts to the streams. The proposed harvest activities have the potential to cause additional water quality problems downstream from harvest activities.. There are some areas that will not be restored to

their potential for many years. Some of the streams will continue to erode until large woody debris placements have occurred and riparian planting is well established. Standards and Guides for the range allotments will start restoration of vegetation in many areas creating an upward trend over time. This alternative addresses areas with water quality problems and prevents additional impacts downstream to the larger rivers. This alternative does not address the mistletoe infected conifers. Without harvest in these areas would expect minimal effects downstream from harvest activities.

Alternative 5 Proposal and Effects Table

Alternative 5	Acres - % of total	Soil/Water Effects
Total Harvest Acres	1501 = 20%	
Mountain shrub treatment	319 = 23%	Mid affect = 10-15 basal area existing to 5 basal area after treatment
Aspen treatment	148 = 11%	Mid affect = 10-15 basal area existing to 5 basal area after treatment
Thin treatment	516 = 38%	Minimal affect = 80+ basal area existing to 80-100 basal area after treatment
Thin mistletoe	157 = 11%	Minimal affect = 80+ basal area existing to 80-100 basal area after treatment
Thin-mistletoe-aspen	92 = 6%	Minimal affect = 80+ basal area existing to 80-100 basal area after treatment
Mistletoe treatment	14 = 1%	Most affect = 60-80 basal area existing to 5 basal area after treatment
Mistletoe patch	135 = 10%	Most affect = 60-80 basal area existing to 5 basal area after treatment
Helicopter % harvest	428 = 31%	Least negative affect to soils from methodology
cable	378 = 27%	Mid affect
ground	578 = 42%	most negative affect to soils
harvest acres delayed	238	acres delayed from harvest until stream stabilized
	Miles	
restoration miles	47.4	Total number of miles of all restoration for streams and riparian areas
roads decommissioned	5.8 miles	Roads causing water quality problems

ALTERNATIVE 5

STREAM	LWD/RIP	RIP ONLY	NXWEED	SEED	LWD/RHCA
Quicksand Creek	1.09 m.	0.81 m.	1.03 m.	1.10 m.	
Canyon Creek	0.52 m.	0.58 m.	0.52 m.	0.52 m.	
Gold Creek	1.09 m				
Sisley Creek	1.31 m.	1.72 m.			1.11 m.
Conner Creek	2.06 m.	2.79 m.	2.42 m.	1.14 m.	
Fox Creek	1.83 m.	0.93 m.	1.14 m.	1.67 m.	1.11 m.
Magpie Gulch	0.47 m.		0.43 m.	0.47 m.	
Douglas Creek	0.99 m.	0.73 m.	0.99 m.		
Hibbard Creek	0.92 m.	0.48 m.	1.00 m.	1.30 m.	1.24 m.
Spring Gulch	1.98 m.	1.97 m.	0.16 m.		
Pole Gulch	2.41 m.	0.74 m.			
Morgan Creek	1.57 m.	1.94 m.			
Daley Creek		0.57 m.			
Boneyard Gulch		0.58 m.			
TOTALS	16.2 M.	13.8 M.	7.69 M.	6.2 M.	3.46 M.

ALTERNATIVE FEATURES COMPARED

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Total Harvest Acres	2287 = 30%	1885 = 25%	2509 = 33%	773 = 10%	1501 = 20%
Mountain shrub treatment	437	393	440	35	319
Aspen treatment		179	223	191	148
Thin treatment	822	447			516
Thin mistletoe	304	250			157
Thin-mistletoe-aspen		125			92
Mistletoe treatment	604	180			14
Mistletoe patch		191			135
Mature stands			1089		
Immature stands			637		
Isolated Parcels				154	
Marginal treatment				169	
Satisfactory treatment				104	
Helicopter % harvest	972 = 43%	613 = 33%	1184 = 50%	294 = 45%	428 = 31%
cable	397 = 17%	631 = 33%	418 = 17%	232 = 36%	378 = 27%
ground	798 = 35%	518 = 27%	787 = 33%	132 = 20%	578 = 42%
acres delayed	405	211	294	76	238
restoration miles	11.4	47.4	39.7	47.4	47.4
road miles decommissoned	2.5	5.8	2.1	10.7	5.8

Appendix 6

Lookout Mountain VRM Classifications and Visual Contrast Rating Worksheets

2002 - Lookout Mountain VRM Classifications

Rating Unit #001 Morgan Creek Drainage - Class IV		
Scenic Quality	12	B
Distance Zone	60% f/m	40% s/s
Sensitivity Rating		low

Rating Unit #002 Reservoir - Class II & Class III		
Scenic Quality	12	B
Distance Zone	65% f/m	35% s/s
Sensitivity Rating		high

Rating Unit #003 Connor Creek Mining - Class IV		
Scenic Quality	8	C
Distance Zone	85% f/m	15% s/s
Sensitivity Rating		low

Rating Unit #004 Soda Lake/Upper Fox - Class IV		
Scenic Quality	18	B
Distance Zone	50% f/m	50% s/s
Sensitivity Rating		low

Rating Unit #005 Upper Lookout - Class II		
Scenic Quality	22	A
Distance Zone	55% f/m	45% s/s
Sensitivity Rating		medium

Rating Unit #006 Lookout Mt. - Class II		
Scenic Quality	22	A
Distance Zone	60% f/m	40% s/s
Sensitivity Rating		high

f/m = foreground/middleground s/s = seldom seen

1 8400-6
ember 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SENSITIVITY LEVEL RATING SHEET

Date February 11, 2002

District Vale

Resource Area Baker

1. Evaluators ***(names)***
Kevin McCoy and Polly Gribskov

SENSITIVITY LEVEL RATING UNIT (1)	Type of User (2)	Amount of Use (3)	Public Interest (4)	Adjacent Land Uses (5)	Special Areas (6)	Other Factors (7)	Overall Rating (8)	EXPLANATION Also see attached sheet for more background information. (9)
001 (River corridor)	M	M	M	L/M	H	H	H	L/M rating reflects "L" for adjacent lands outside unit boundary while "M" reflects adjacent lands within the boundary unit. "H" overall rating for visible f/m zone by many recreation users along the reservoir and Back-Country By-Way. Also to include "other factor" of coordinating visuals with the Idaho side of the river.
002 (Lookout Mt.)	H	M	M	L	H	-	H	Unit reflects visibility from the lookout tower. plus as seen from I-84 and Hwy 86. "H" overall rating for excellent visibility and visitor presence.
003 (Transition)	H	L/M	M	L	H	-	M	"M" overall rating for lower amount of use along the Lookout Road area, and interest in visuals by users
004 (Sagebrush)	L	L	L	L	-	-	L	"L" overall rating for rolling to steep hillsides with sagebrush and grasslands, and low visitor visitation and interest in visuals.

INSTRUCTIONS

Steps in the Sensitivity Level Analysis

1. Divide the inventory area into logical sensitivity rating units.

2. Analyze the factors which indicate visual sensitivity.

3. For each rating unit, rate each factor as high, moderate, or low using the following outline as a general guide:

   a. *Type of Users.* Maintenance of visual quality is:
      - a major concern for most users ..... High
      - a moderate concern for most users ..... Moderate
      - a low concern for most users ..... Low

   b. *Amount of use.* Maintenance of visual quality becomes more important as the level of use increases(see table below):
      - high level of use ..... High
      - moderate level of use ..... Moderate
      - low level of use ..... Low

   c. *Public Interest.* Maintenance of visual quality is:
      - a major public issue ..... High
      - a moderate public issue ..... Moderate
      - a minor public issue ..... Low

   d. *Adjacent Land Uses.* Maintenance of visual quality to sustain adjacent land use objectives is:
      - very important ..... High
      - moderately important ..... Moderate
      - slightly important ..... Low

   e. *Special Area.* Maintenance of visual quality to sustain Special Area management objectives is:
      - very important ..... High
      - moderately important ..... Moderate
      - slightly important ..... Low

4. Determine the over-all sensitivity level for each rating unit. This is a judgmental process which requires a careful analysis of all the above factors. Review the ratings given to each factor and analyze the relationship between factors. A high rating in any one factor does not necessarily mean that the over-all sensitivity level rating should be high. For example, the rating for "type of users" might be high but the "amount of use" might be low. Consequently, the over-all rating could be low or moderate. Management should be involved in this rating process.

5. Record the ratings and explanation on the sensitivity level rating sheet.

TABLE FOR CLASSIFYING AMOUNT OF USE

TYPE AREA	HIGH	MODERATE	LOW
Roads & Highways	Greater than 45,000 visits/yr.	5,000-45,000 visits/yr.	Lesser than 5,000 visits/yr.
Rivers & Trails	Greater than 20,000 visits/yr.	2,000-20,000 visits/yr.	Lesser than 2,000 visits/yr.
Recreation Sites	Greater than 10,000 visitor days/yr.	2,000-10,000 visitor days/yr.	Lesser than visitor 2,000 days/yr.

Scenic Quality Field Inventory
Rating Unit #001, Morgan Creek Drainage

Date: 7/14/99
District: Vale
Resource Area: Baker
Evaluator(s): Saundra Miles

Relevant Photographs (from the VRM photo album): all photos filed in the Morgan Cr Rd and Morgan Mt Rd sections; pages 1 and 2 of photos in the Reservoir Rd section; and page 1 of photos in the Lookout Mt Rd section.

01 Morgan Crk 2

	LANDFORM/WATER	VEGETATION	STRUCTURE
Form	Rolling hillsides fingering down to the reservoir	Low growing forms blending into the landscape	--
Line	Bold skyline, with simple curved lines	Irregular and indistinct	--
Color	Browns dominate with spotty greens	Olive to dark greens, various shades of browns	--
Texture	Fine to medium	Fine to coarse grain, with sparse to dense patterns occurring in uneven/random regularity.	--

Narrative:
SQRU #1 is within the physical providence of the Columbia Plateaus. It includes lands viewed from the bottom of the Reservoir up Morgan Creek drainage. Key observation points were along the road systems (Morgan Cr, Morgan Mt, and portion of the reservoir and Lookout Mt roads) as reflected in the photos listed above. Observation time was during July.

The majority of vegetation is comprised of grasses, thistles, sagebrush, and mullein. Larger shrubery and vegetation thrive near water sources such as Morgan Creek. Occasionally a small tree or group of trees will dot the landscape. Morgan Creek itself is not noticeable unless one is right next to the water source. Viewing space is characteristic of this unit. Few roads cut into the landscape.

	HIGH	MEDIUM	LOW	EXPLANATION OR RATIONAL
a. Landform		2		moderate canyon hillsides
b. Vegetation		3		
c. Water			1	sometimes noticeable
d. Color		2		predominate mute tones with some contrast variation
e. Adjacent Scenery		3		adjacent scenery blends in with the unit
f. Scarcity			1	
g. Cultural Modification		0		
TOTALS	0	10	2	= 12

SCENIC QUALITY CLASSIFICATION

- ☐ **A** - 19 or more
- ☑ **B** - 12 - 18
- ☐ **C** - 11 or less

Scenic Quality Field Inventory

Rating Unit #002, Reservoir

Date: 7/21/99
District: Vale
Resource Area: Baker
Evaluator(s): Saundra Miles
Relevant Photographs (from the VRM photo album): all photos filed in the Reservoir road section.

	LANDFORM/WATER	VEGETATION	STRUCTURE
Form	Steep to moderate hillsides fingering down to the reservoir, intermixed with rock outcrops.	Majority is low growing, blending into the landform.	(when present) Square & rectangular
Line	Bold skyline with simple curved lines	Irregular and indistinct	Straight, angular
Color	Soft browns and greys with patches of greens	Olive to dark greens, light browns	Multitude of colors
Texture	Fine to coarse	Fine to coarse grain, sparse to dense patterns occurring in uneven random regularity.	Fine to coarse

Narrative:
SQRU #2 is within the physical providence of the Columbia Plateaus. It includes lands viewed from the bottom of the Reservoir. Key observation points were along the Snake River Road as reflected in the photos listed above. Observation time was during July.

The majority of vegetation is comprised of grasses, thistles, and sagebrush. Larger shrubery and vegetation thrive near water sources. Vegetation is very similar to Unit #1 with the exception of more trees clusters in drainages and on northern slopes of hillsides. Unlike Unit #1, Unit #2 has vertical rock cliffs, mostly located in the northern region. Space and open vastness is characteristic of this unit. Few roads leave the reservoir road and head into Unit #2. This unit also has scattered residences and summer homes on private lands along and near the reservoir shoreline. These structures would not necessarily be seen from the road when looking into the unit, but would if observing the unit from a boat in the reservoir or from the Idaho side.

	HIGH	MEDIUM	LOW	EXPLANATION OR RATIONAL
a. Landform		3		some rock cliffs add vertical relief
b. Vegetation		3		
c. Water			1	reservoir is not part of the unit, creeks visible sometimes
d. Color		2		predominate mute tones with patches of contrast greens
e. Adjacent Scenery		2		adjacent scenery includes reservoir (+)and structures (-)
f. Scarcity			1	
g. Cultural Modification		0		structures are in adjacent scenery not in SQRU
TOTALS	0	10	2	= 12

SCENIC QUALITY CLASSIFICATION

- ☐ **A** - 19 or more
- ☑ **B** - 12 - 18
- ☐ **C** - 11 or less

Scenic Quality Field Inventory

Rating Unit #003, Connor Creek Mining

Date: 7/26/99
District: Vale
Resource Area: Baker
Evaluator(s): Saundra Miles
Relevant Photographs (from the VRM photo album): all photos filed on pages 12, 13, and 14 of Connor Creek section.

	LANDFORM/WATER	VEGETATION	STRUCTURE
Form	Steep dipping hillside walls forming drainages. Flat running water.	Simple to complex forms	Rectangles, pyramdial, and circular
Line	Meandering to zig-zag road lines, meandering creek, rolling hillsides.	Irregular and soft	Combination of many types: angular, straight, rounded, vertical, horizontal, etc.
Color	Soft browns with some greens. White to clear rushing water.	Browns and greens	Multitude of colors, some bold, some soft
Texture	Fine to coarse	Fine to coarse grain, sparse to medium composition occurring unevenly and at random intervals.	Fine to coarse

Narrative:
SQRU #3 is within the physical providence of the Columbia Plateaus. It includes the mining operations within Connor Creek drainage. Key observation points were along the Connor Creek Road and are reflected in the photos listed above. No close ups were taken of the mining community. Observation time was during July.

The lower half of this unit has vegetative characteristics of Unit #1 while the upper half reflects the vegetation of Unit #4. The water in the creek is not noticeable unless one is right next to it or crossing it near the bottom of the drainage.

	HIGH	MEDIUM	LOW	EXPLANATION OR RATIONAL
a. Landform		3		
b. Vegetation		3		
c. Water			1	is noticeable at the bottom of the drainage only
d. Color			1	color of residences detracts from the natural subtle landscape colors
e. Adjacent Scenery		3		adjacent scenery helps to focus on the landform
f. Scarcity			1	
g. Cultural Modification			- 4	concentrated mining community
TOTALS	0	9	- 1	= 8

SCENIC QUALITY CLASSIFICATION

- ☐ **A** - 19 or more
- ☐ **B** - 12 - 18
- ☑ **C** - 11 or less

SQRU'3

Scenic Quality Field Inventory

Rating Unit #004, Soda Lake/Upper Fox

Date: 7/26/99
District: Vale
Resource Area: Baker
Evaluator(s): Saundra Miles

Relevant Photographs (from the VRM photo album): all photos filed in Soda Lake Road section, and photos on page 9 of the Connor Creel road section.

	LANDFORM/WATER	VEGETATION	STRUCTURE
Form	Rolling hillsides with dips and valleys, water is oblong.	Massive forms interspersed with contrasting vegetation	--
Line	Long sloping curved lines, bold skyline. Water is circular or straight	Irregular, jagged, and indistinct	--
Color	Greens, especially dark green dominate with patches of browns.	Soft browns to various greens	--
Texture	Fine to coarse	Fine to coarse grain, with sparse to dense composition occurring in unevenly.	--

Narrative:
SQRU #4 is within the physical providence of the Columbia Plateaus. It includes land features as Soda Lake as well as Quaking Aspen Flat along Connor Creek Road. The two isolated BLM 40 acre units are included in this inventory unit as well as a lot of intermixed private property. The unit includes the upper sagebrush/grassland hillsides transitioning into forested mountain tops. As the elevation rises more trees appear. Key observation points were along the road systems (Connor Creek and Soda Lake roads) as reflected in the photos listed above. Observation time was during July. Winter snow would increase the dramatic view.

	HIGH	MEDIUM	LOW	EXPLANATION OR RATIONAL
a. Landform		3		
b. Vegetation	4			some "bland" areas intermixed
c. Water			1	not always seen
d. Color		3		
e. Adjacent Scenery		4		majority of adjacent scenery blends in and enhances
f. Scarcity		3		
g. Cultural Modification		0		
TOTALS	4	13	1	= 18

SCENIC QUALITY CLASSIFICATION

- ☐ **A** - 19 or more
- ☑ **B** - 12 - 18
- ☐ **C** - 11 or less

SQRU'4

Scenic Quality Field Inventory
Rating Unit #005, Upper Lookout

Date: 2/11/02
District: Vale
Resource Area: Baker
Evaluator(s): Kevin McCoy and Polly Gribskov

Relevant Photographs (from the VRM photo album): all photos filed on page 11 of the Lookout Mt section.

	LANDFORM/WATER	VEGETATION	STRUCTURE
Form	Rolling hillsides with large blocks of forested lands intermixed with open meadows.	Complex forms varying with stand maturity and simple forms with meadows.	–
Line	Undulating mountains with meandering road and circular meadows.	Irregular, jagged to soft and flowing.	–
Color	Dark greens and browns, black shadows in forests, softer shades in meadows.	Various greens and browns.	–
Texture	Coarse to fine.	Fine to coarse grain with dense composition.	--

Narrative:
SQRU #5 is within the physical providence of the Columbia Plateaus. It includes facilities as Bassar Diggens campground and livestock corrals. Key observation points were along the (Lookout Mtn. Rd. and within Bassar Diggens) as reflected in the photos listed above. The Lookout road is used by visitors travelling to the top of Lookout Mount from Interstate Highway 84. In this unit, open views are interdispersed between the predominate up close tree stands. Hence most photos taken of this unit reflect the viewpoints. Observation time was during October.

The tree stands are intermixed with infested areas of mistletoe and bug kill; sometimes very noticeable - sometimes not - to the untrained eye.

	HIGH	MEDIUM	LOW	EXPLANATION OR RATIONAL
a. Landform		3		
b. Vegetation	4			aspen community regionally unique
c. Water			0	
d. Color	5			October fall colors outstanding
e. Adjacent Scenery	5			entire viewscape canyon, valleys, mountains
f. Scarcity	5			aspen regionally unique in size and structure
g. Cultural Modification		0		
TOTALS	19	3	0	= 22

SCENIC QUALITY CLASSIFICATION

☑ **A** - 19 or more
☐ **B** - 12 - 18
☐ **C** - 11 or less

Scenic Quality Field Inventory
Rating Unit #006, Lookout Mt.

Date: 2/11/02
District: Vale
Resource Area: Baker
Evaluator(s): Kevin McCoy and Polly Gribskov

Relevant Photographs (from the VRM photo album): photos filed on page 11 of Lookout Mt Rd. section.

	LANDFORM/WATER	VEGETATION	STRUCTURE
Form	Prominent rising cone shape.		Square and rectangular
Line	Bold skyline, faint zig-zag line of the east side access road.	Soft and defused with the landform	Straight and bold
Color		Brown grasses, few green trees and shrubs near the base. Colorful wildflowers viewed up close.	Brown/yellow and white
Texture	Uniformly fine grain with some scattered medium grain.	Fine grain, with sparse patterns	Dense

Narrative:
SQRU #6 is within the physical providence of the Columbia Plateaus. It includes the upper bare or treeless portion area of Lookout Mountain. Key observation points were along the road system (Lookout Mt.) as reflected in the photos listed above. Observation time was during October. Lookout Mt., 7,120' high can be distinguished as a background silhouette as far away as Richland and Baker City areas.

The majority of vegetation is comprised of grasses, low growing shrubs, and wildflowers. The wildflowers, which are profuse during their blooming time, are not evident until one drives up the road to the tower. The access road leading to the top can only be seen from certain viewpoints and usually blends in well with the landform. There is the noticeable structure of the Lookout Tower and from the east side, the accompanying outhouse. Winter snows would probably enhance the form and color contrast of this site.

	HIGH	MEDIUM	LOW	EXPLANATION OR RATIONAL
a. Landform		3		
b. Vegetation	5			entire viewshed not just foreground
c. Water			0	
d. Color	5			outstanding fall colors plus winter would produce dominate scenic element
e. Adjacent Scenery	5			skyline backdrop emphasis mountain top
f. Scarcity	5			regionally unique aspen stand profuse wildflower season
g. Cultural Modification			-1	adds some discordant element
TOTALS	20	3	-1	= 22

SCENIC QUALITY CLASSIFICATION

☑ **A** - 19 or more
☐ **B** - 12 - 18
☐ **C** - 11 or less

Form 8400-4
(September 1985)

Alt. 1-5

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: 2/11/02
District: Vale
Resource Area: Baker
Activity (program): recreation

SECTION A. PROJECT INFORMATION

1. Project Name: Lookout Mtn. VRM
2. Key Observation Point: #1 Lookout
3. VRM Class: II

4. Location
Township: 11 S
Range: 44 E
Section: 13

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM		Same as Alt. #1	
LINE			
COLOR			
TEXTURE			

FORM			
LINE			
COLOR			
TEXTURE			

- The mountain shrub and PFA treatments will not attract attention because even though they will change color from green to increased yellow, there will not be a focal point change. However, if straight line skid trails are created to remove logs, they will create a long term contrast of line.
- The mistletoe patch treatment will not meet Class II because the removal of the solid mass of green will definitely attract attention.
- The mature and immature DF stand treatment in Alt. 3 will not meet Class II because almost 1726 acres of reducing the basal area to 60-100 sq. ft. would change the color and texture of the stands.
- The aspen treatment in Alt. 4 will not meet Class II because it causes a strong change in color, texture, and form. Stumps will be created.
- The road to be constructed down the ridge above Sisley Creek will be very visible from Lookout Mtn. KOP 1. It will not meet Class II. The temporary road in Alt. 3 may meet Class II if vegetative screening is retained.

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form					✓							
Line					✓							
Color					✓							
Texture					✓							

2. Does project design meet visual resource management objectives? ☐ Yes ☑ No (Explain on reverse side)

3. Additional mitigating measures recommended ☑ Yes ☐ No (Explain on reverse side)

Evaluator's Names Date

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: 2/11/02
District: Vale
Resource Area: Baker
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name: Lookout Mtn.
2. Key Observation Point: Sisley Creek #2
3. VRM Class: II
4. Location
   Township: 11 S
   Range: 44 E
   Section: 36
5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEXTURE			

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE	KOP #2		
COLOR	• Thin treatment will not meet Class II due to reduction of basal area which changes texture and form. It opens up the stand to the point it would attract attention because it is currently a solid mass of green.		
TEXTURE			

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form		✓				✓						
Line	✓						✓					
Color	✓					✓						
Texture	✓					✓						

2. Does project design meet visual resource management objectives? ☐ Yes ☑ No (Explain on reverse side)

3. Additional mitigating measures recommended ☑ Yes ☐ No (Explain on reverse side)

Evaluator's Names Date

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Alt. 1

3-8-01

District: VALE

Resource Area: BAKER

Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name: LOOKOUT MTN
2. Key Observation Point: #3 BASSER DIGGINGS
3. VRM Class: III

4. Location
Township 11S
Range 45E
Section 30 19

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	SLOPING, SMOOTH	VERTICAL, IRREGULAR CONICAL, TALL	SQUARE, RECTANGULAR TRIANGULAR, LINEAR FEATURE
LINE	ANGULAR, WEAK Regular SOFT.	PERPENDICULAR, MOSTLY CONTINUOUS, IRREGULAR	VERTICAL, HORIZONTAL DIAGONAL
COLOR	GRAYISH WHITE, TAN	GREEN, Yellow, Reddish BROWN GRAY, TANS	Beige, Taupe, BROWN Brown/Grey
TEXTURE	MEDIUM, Gradational (SMOOTH TO Rough), ORDERED	COARSE TO SMOOTH, CONTINUOUS	Smooth

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NO CHANGE	IRREGULAR, LOSE VERTICAL STRONG CHANGE	NO CHANGE
LINE		CONTINUOUS, IRREGULAR	
COLOR		Increase yellow & Reds LOSE CONSIDERABLE GREEN INCREASE WHITE	
TEXTURE		MORE COURSE TO SMOOTH CONTINUOUS	

SECTION D. CONTRAST RATING ☐ SHORT TERM ☑ LONG TERM

1. DEGREE OF CONTRAST	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form				✓	✓							✓
Line				✓		✓						✓
Color				✓	✓							✓
Texture				✓		✓						✓

2. Does project design meet visual resource management objectives? ☑ Yes ☑ No (Explain on reverse side) SEE COMMENTS

3. Additional mitigating measures recommended ☑ Yes ☐ No (Explain on reverse side)

Evaluator's Names Date

SECTION D. (Continued)

ments from ~~item 2~~.

Contrast may not meet class III visual quality, however in our professional judgement, the change is more positive than negative when changing from more decadent mistletoe infected Conifers to released Aspen w/ increased hue, vivid color & luminous color -

Additional Mitigating Measures (See item 3)

HANDPILE SLASH w/in VISUAL DISTANCE OF REC. SITE.

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(September 1983)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Alt. 2

Date 5-8-01
District VALE
Resource Area BAKER
Activity (program) REC

SECTION A. PROJECT INFORMATION

1. Project Name: Lookout MTN
2. Key Observation Point: #3 Basser diggings
3. VRM Class: III

4. Location
Township 11S
Range 45E
Section 30

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM		Same as ALT 1	
LINE			
COLOR			
TEXTURE			

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM		NO TREATMENT W/IN VISUAL ZONE	
LINE			
COLOR			
TEXTURE			

SECTION D. CONTRAST RATING ☐ SHORT TERM ☑ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				✓				✓				✓
Line				✓				✓				✓
Color				✓				✓				✓
Texture				✓				✓				✓

2. Does project design meet visual resource management objectives? ☑ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names Date

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Additional Mitigating Measures (See item 3)

Comments from item 2.

SECTION D. (Continued)

(September 1985) ALT 3 — UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

ALT. 3

Date 3-8-01
District VALE
Resource Area BAKER
Activity (program) REC

SECTION A. PROJECT INFORMATION

1. Project Name: LOOKOUT MTN
2. Key Observation Point: #3 BASSER DIGGINGS
3. VRM Class: III
4. Location: Township 11S, Range 45E, Section 30
5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	SAME AS	ALT 1	
LINE			
COLOR			
TEXTURE			

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	SAME	AS ALT 1	
LINE			
COLOR			
TEXTURE			

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEM.	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				✓	✓							✓
Line				✓		✓						✓
Color				✓	✓							✓
Texture				✓		✓						✓

2. Does project design meet visual resource management objectives? ☑ Yes ☑ No (Explain on reverse side)

3. Additional mitigating measures recommended ☑ Yes ☐ No (Explain on reverse side)

Evaluator's Names — Date

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Additional Mitigating Measures (See item 3)

See ALT 4

SECTION D. (Continued)

Comments from item 2.

See ALT 4

ALT 1

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Alt. 4

Date: 3-8-01
District: VALE
Resource Area: BAKER
Activity (program): REC

SECTION A. PROJECT INFORMATION

1. Project Name: LOOKOUT MTN
2. Key Observation Point: #3 Basser Diggings
3. VRM Class: II

4. Location
Township: 11S
Range: 45E
Section: 30

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Same as ALT 1		
LINE			
COLOR			
TEXTURE			

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NO TREATMENT W/N Visual Zone		
LINE			
COLOR			
TEXTURE			

SECTION D. CONTRAST RATING ☐ SHORT TERM ☑ LONG TERM

1. DEGREE OF CONTRAST

	FEATURES											
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form				✓				✓				✓
Line												
Color												
Texture												

2. Does project design meet visual resource management objectives? ☑ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names Date

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Additional Mitigating Measures (See item 3)

SECTION D. (Continued)

iments from item 2.

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(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: 2/11/02
District: Vale
Resource Area: Baker
Activity (program):

SECTION A. PROJECT INFORMATION

1. Project Name: Lookout Mtn.
2. Key Observation Point: #4 Juniper
3. VRM Class: II
4. Location
   Township: _____
   Range: _____
   Section: _____
5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE			
COLOR			
TEXTURE			

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM			
LINE	KOP #4		
COLOR	• The juniper treatments will not meet Class II. The simple creation of juniper stumps will attract attention. The stands will move from a mottled brown to solid brown color with a change in texture, form, and color. A "bald knob" will be created.		
TEXTURE			

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				✓	✓							✓
Line				✓		✓						✓
Color				✓	✓							✓
Texture				✓	✓							✓

2. Does project design meet visual resource management objectives? ☐ Yes ☑ No (Explain on reverse side)

3. Additional mitigating measures recommended ☑ Yes ☐ No (Explain on reverse side)

Evaluator's Names Date

(September 1985) HV

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Alt. 1

Date 3-8-01
District VALE
Resource Area BAKER
Activity (program) REC

SECTION A. PROJECT INFORMATION

1. Project Name: LOOKOUT MTN
2. Key Observation Point: #5 HIBBARD CREEK
3. VRM Class: III

4. Location
Township 12 S
Range 44 E
Section 1

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	CONVERGING (STRONGLY) BOLD Rugged	CONICAL PATCHY	NO
LINE	DIAGONAL CONICAL	VERTICLE DIFFUSE EDGE JAGGED COMPLEX	
COLOR	GREY TAN	GREEN yellow TAN	
TEXTURE	MODERATE TO SMOOTH CONTRASTY	SMOOTH TO COARSE DENSE to SPARSE (complex)	

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NO CHANGE	LITTLE CHANGE	NO CHANGE
LINE		Increase diffuse (strong change) " " Vertigle " " Jagged Decrease complexity	
COLOR		Increase yellows, Tans, Brown Decrease greens	
TEXTURE		SMOOTH to COARSE MODERATE to BARREN	

SECTION D. CONTRAST RATING ☐ SHORT TERM ☑ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				✓	✓		✓					✓
Line				✓	✓							✓
Color				✓	✓							✓
Texture				✓	✓							✓

2. Does project design meet visual resource management objectives? ☐ Yes ☑ No (Explain on reverse side)

3. Additional mitigating measures recommended ☑ Yes ☐ No (Explain on reverse side)

Evaluator's Names Date

SECTION D. (Continued)

nments from item 2.

-POSSIBLE GRAVEL PIT WOULD NOT MEET CLASS III UNLESS MIDIGATED HIGHLY

Additional Mitigating Measures (See item 3)

-SLASH DISPOSAL NECESSARY - NO SKELETONS
Screen Road CONSTRUCTION

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(September 1985) UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Alt. 2

Date 3-8-01
District VALE
Resource Area BAKER
Activity (program) Rec.

SECTION A. PROJECT INFORMATION

1. Project Name: LOOKOUT MOUTAIN
2. Key Observation Point: #5 HIBBARD CREEK
3. VRM Class: III
4. Location: Township 12S, Range 44E, Section 1
5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NO CHANGE FROM ALT 1		
LINE			
COLOR			
TEXTURE			

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NO CHANGE FROM ALT 1		
LINE			
COLOR			
TEXTURE			

SECTION D. CONTRAST RATING ☐ SHORT TERM ☑ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				✓			✓					✓
Line				✓	✓							✓
Color				✓	✓							✓
Texture				✓	✓							✓

2. Does project design meet visual resource management objectives? ☐ Yes ☑ No (Explain on reverse side)

3. Additional mitigating measures recommended ☑ Yes ☐ No (Explain on reverse side)

Evaluator's Names Date

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Additional Mitigating Measures (See item 3)

See Alt 1

SECTION D. (Continued)

Comments from item 2.

See Alt 1

(September 1985)

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DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Alt. 3

Date 11-2-01
District VALE
Resource Area BAKER
Activity (program) REC

SECTION A. PROJECT INFORMATION

1. Project Name: LOOKOUT MTN.
2. Key Observation Point: #5 Hibbard Cr.
3. VRM Class: III

4. Location
Township 12S
Range 44E
Section 1

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NO CHANGE FROM ALT 1		
LINE			
COLOR			
TEXTURE			

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NO CHANGE	LITTLE CHANGE	NO CHANGE
LINE		INCREASE DIFFUSE EDGES, VERTICLES & JAGGED INCREASE COMPLEXITY	
COLOR		INCREASE yellows, TANS, BROWNS DECREASE GREEN	
TEXTURE		CHANGE FROM SMOOTH TO COARSE	

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form				✓			✓					✓
Line				✓	✓							✓
Color				✓	✓							✓
Texture				✓	✓							✓

2. Does project design meet visual resource management objectives? ☐ Yes ☑ No (Explain on reverse side)

3. Additional mitigating measures recommended ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names Date

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Additional Mitigating Measures (See item 3)

Description is beyond mitigation

SECTION D. (Continued)

Comments from item 2.

(September 1985) AL

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DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

AH. 4

Date 11-2-01
District VALE
Resource Area BAKER
Activity (program) REC

SECTION A. PROJECT INFORMATION

1. Project Name: LOOKOUT MTN.
2. Key Observation Point: #5 HIBBARD CREEK
3. VRM Class: III
4. Location: Township 12 S, Range 44 E, Section 1
5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NO CHANGE FROM ALT 1		
LINE			
COLOR			
TEXTURE			

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NO CHANGE	LITTLE CHANGE	NO CHANGE
LINE		INCREASE DIFFUSE EDGES, VERTICLES & JAGGED INCREASE COMPLEXITY	
COLOR		INCREASE YELLOWS, TANS, BROWNS DECREASE GREENS	
TEXTURE		CHANGE FROM SMOOTH TO COARSE	

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
ELEMENTS	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form				✓			✓					✓
Line				✓		✓						✓
Color				✓		✓						✓
Texture				✓		✓						✓

2. Does project design meet visual resource management objectives? ☑ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☐ Yes ☑ No (Explain on reverse side)

Evaluator's Names Date

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Additional Mitigating Measures (See item 3)

SECTION D. (Continued)

omments from item 2.

BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

AH. 5

11-2-01

District VALE

Resource Area BAKER

Activity (program) RPE

SECTION A. PROJECT INFORMATION

Project Name: LOOKOUT MTN

2. Key Observation Point: #5 HIBBARD CR.

3. VRM Class: III

4. Location
Township 12 S
Range 44 E
Section 19

5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	NO	CHANGE	
LINE			
COLOR			
TEXTURE			

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
F		NO CHANGE	
LINE			
COLOR			
TEXTURE			

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

DEGREE OF CONTRAST	FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form												
Line												
Color												

2. Does project design meet visual resource management objectives? ☐ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☐ Yes ☐ No (Explain on reverse side)

Evaluator's Names Date

NO SIGNIFICANT CHANGE TO ALTERNATIVES

Appendix 7

Wildlife Species Potentially Found in the Lookout Mountain Vicinity (table)

Wildlife Species Potentially Occupying the Lookout Mountain Analysis Area

Species	Scientific Name	Species	Scientific Name
Amphibians		**Reptiles**	
Great Basin Spadefoot Toad	Scaphiopus intermontanus	Western Fence Lizard	Sceloporus occidentalis
Western Toad	Bufo boreas	Sagebrush Lizard	Sceloporus graciosus
Pacific Treefrog	Pseudacris regilla	Side-blotched Lizard	Uta stansburiana
		Short-horned Lizard	Phrynosoma douglassii
		Western Skink	Eumeces skiltonianus
		Ringneck Snake	Diadophis punctatus
		Striped Whipsnake	Masticophis taeniatus
		Gopher Snake	Pituophis catenifer
		Common Garter Snake	Thamnophis sirtalis
		Western Terrestrial Garter Snake	Thamnophis elegans
		Night Snake	Hypsiglena torquata
		Western Rattlesnake	Crotalus viridis
Birds			
Great Blue Heron	Ardea herodias	Cliff Swallow	Hirundo pyrrhonota
Wood Duck	Aix sponsa	Gray Jay	Perisoreus canadensis
Barrow's Goldeneye	Bucephala islandica	Blue Jay	Cyanocitta cristata
Bufflehead	Bucephala albeola	Steller's Jay	Cyanocitta stelleri
Hooded Merganser	Lophodytes cucullatus	Black-billed Magpie	Pica pica
Common Merganser	Mergus merganser	Common Raven	Corvus corax
Turkey Vulture	Cathartes aura	Pinyon Jay	Gymnorhinus cyanocephalus
Sharp-shinned Hawk	Accipiter striatus	Clark's Nutcracker	Nucifraga columbiana
Cooper's Hawk	Accipiter cooperii	Black-capped Chickadee	Parus atricapillus
Red-tailed Hawk	Buteo jamaicensis	Mountain Chickadee	Parus gambeli
Rough-legged Hawk	Buteo lagopus	Chestnut-backed Chickadee	Parus rufescens
Ferruginous Hawk	Buteo regalis	Bushtit	Psaltriparus minimus
Golden Eagle	Aquila chrysaetos	White-breasted Nuthatch	Sitta carolinensis
Bald Eagle	Haliaeetus leucocephalus	Red-breasted Nuthatch	Sitta canadensis
Osprey	Pandion haliaetus	Pygmy Nuthatch	Sitta pygmaea
Merlin	Falco columbarius	Brown Creeper	Certhia americana
American Kestrel	Falco sparverius	House Wren	Troglodytes aedon
Blue Grouse	Dendragapus obscurus	Winter Wren	Troglodytes troglodytes
Ruffed Grouse	Bonasa umbellus	Canyon Wren	Catherpes mexicanus
California Quail	Callipepla californica	Rock Wren	Salpinctes obsoletus
Chukar	Alectoris chukar	American Robin	Turdus migratorius
Ring-necked Pheasant	Phasianus colchicus	Hermit Thrush	Catharus guttatus
American Coot	Fulica americana	Western Bluebird	Sialia mexicana
Solitary Sandpiper	Tringa solitaria	Mountain Bluebird	Sialia currucoides
Rock Dove	Columba livia	Townsend's Solitaire	Myadestes townsendi
Mourning Dove	Zenaida macroura	Golden-crowned Kinglet	Regulus satrapa
Barn Owl	Tyto alba	Ruby-crowned Kinglet	Regulus calendula
Flammulated Owl	Otus flammeolus	Bohemian Waxwing	Bombycilla garrulus
Great Horned Owl	Bubo virginianus	Cedar Waxwing	Bombycilla cedrorum
Burrowing Owl	Athene cunicularia	Northern Shrike	Lanius excubitor
Long-eared Owl	Asio otus	Loggerhead Shrike	Lanius ludovicianus
Short-eared Owl	Asio flammeus	Solitary Vireo	Vireo solitarius
Common Nighthawk	Chordeiles minor	Red-eyed Vireo	Vireo olivaceus
Black Swift	Cypseloides niger	Warbling Vireo	Vireo gilvus
Vaux's Swift	Chaetura vauxi	Orange-crowned Warbler	Vermivora celata
White-throated Swift	Aeronautes saxatalis	Nashville Warbler	Vermivora ruficapilla
Black-chinned Hummingbird	Archilochus alexandri	Yellow Warbler	Dendroica petechia

Species	Scientific Name	Species	Scientific Name
Rufous Hummingbird	Selasphorus rufus	Yellow-rumped Warbler	Dendroica coronata
Calliope Hummingbird	Stellula calliope	Black-throated Gray Warbler	Dendroica nigrescens
Belted Kingfisher	Ceryle alcyon	Dark-eyed Junco	Junco hyemalis
Townsend's Warbler	Dendroica townsendi	Chipping Sparrow	Spizella passerina
Macgillivray's Warbler	Oporornis tolmiei	Brewer's Sparrow	Spizella breweri
Common Yellowthroat	Geothlypis trichas	White-crowned Sparrow	Zonotrichia leucophrys
Yellow-breasted Chat	Icteria virens	Golden-crowned Sparrow	Zonotrichia atricapilla
Wilson's Warbler	Wilsonia pusilla	Fox Sparrow	Passerella iliaca
American Redstart	Setophaga ruticilla	Lincoln's Sparrow	Melospiza lincolnii
Western Meadowlark	Sturnella neglecta	Song Sparrow	Melospiza melodia
Yellow-headed Blackbird	Xanthocephalus xanthocephalus	Pileated Woodpecker	Dryocopus pileatus
Red-winged Blackbird	Agelaius phoeniceus	Lewis' Woodpecker	Melanerpes lewis
Northern Oriole	Icterus galbula	Williamson's Sapsucker	Sphyrapicus thyroideus
Brown-headed Cowbird	Molothrus ater	Hairy Woodpecker	Picoides villosus
Western Tanager	Piranga ludoviciana	Downy Woodpecker	Picoides pubescens
Black-headed Grosbeak	Pheucticus melanocephalus	White-headed Woodpecker	Picoides albolarvatus
Lazuli Bunting	Passerina amoena	Western Kingbird	Tyrannus verticalis
Evening Grosbeak	Coccothraustes vespertinus	Ash-throated Flycatcher	Myiarchus cinerascens
Purple Finch	Carpodacus purpureus	Say's Phoebe	Sayornis saya
Cassin's Finch	Carpodacus cassinii	Willow Flycatcher	Empidonax traillii
House Finch	Carpodacus mexicanus	Hammond's Flycatcher	Empidonax hammondii
Pine Grosbeak	Pinicola enucleator	Dusky Flycatcher	Empidonax oberholseri
Pine Siskin	Carduelis pinus	Olive-sided Flycatcher	Contopus borealis
American Goldfinch	Carduelis tristis	Horned Lark	Eremophila alpestris
Lesser Goldfinch	Carduelis psaltria	Violet-green Swallow	Tachycineta thalassina
Red Crossbill	Loxia curvirostra	Tree Swallow	Tachycineta bicolor
White-winged Crossbill	Loxia leucoptera	Bank Swallow	Riparia riparia
Green-tailed Towhee	Pipilo chlorurus	Barn Swallow	Hirundo rustica
Rufous-sided Towhee	Pipilo erythrophthalmus		
Lark Sparrow	Chondestes grammacus		

Mammals

Vagrant Shrew	Sorex vagrans	Gray Fox	Urocyon cinereoargenteus
Dusky Shrew	Sorex monticolus	Black Bear	Ursus americanus
Little Brown Myotis	Myotis lucifugus	Marten	Martes americana
Long-eared Myotis	Myotis evotis	Fisher	Martes pennanti
Long-legged Myotis	Myotis volans	Long-tailed Weasel	Mustela frenata
California Myotis	Myotis californicus	Mink	Mustela vison
Silver-haired Bat	Lasionycteris noctivagans	Wolverine	Gulo gulo
Big Brown Bat	Eptesicus fuscus	Badger	Taxidea taxus
Hoary Bat	Lasiurus cinereus	Striped Skunk	Mephitis mephitis
Pallid Bat	Antrozous pallidus	River Otter	Lutra canadensis
Pika	Ochotona princeps	Bobcat	Felis rufus
Snowshoe Hare	Lepus americanus	Elk	Cervus elaphus
Yellow-bellied Marmot	Marmota flaviventris	Pronghorn	Antilocapra americana
Western Gray Squirrel	Sciurus griseus	Mountain Lion	Felis concolor
Red Squirrel	Tamiasciurus hudsonicus	Mule Deer	Odicoileus hermionus
Northern Flying Squirrel	Glaucomys sabrinus	Bushy-tailed Woodrat	Neotoma cinerea
Northern Pocket Gopher	Thomomys talpoides	Long-tailed Vole	Microtus longicaudus
Great Basin Pocket Mouse	Perognathus parvus	Muskrat	Ondatra zibethicus
Beaver	Castor canadensis	House Mouse	Mus musculus
Western Harvest Mouse	Reithrodontomys megalotis	Western Jumping	Zapus princeps Mouse
Canyon Mouse	Peromyscus crinitus	Porcupine	Erethizon dorsatum
Deer Mouse	Peromyscus maniculatus	Coyote	Canis latrans
		Red Fox	Vulpes vulpes

Appendix 8

"11-point Strategy" Compliance

The following sets forth the directives in IB No. OR-2001-219, "An 11-point Strategy for Restoring Eastern Oregon Forests, Watersheds and Communities," and describes how this Strategy was considered in the formulation of the proposed Lookout Mountain project.

1. **There are broad areas of potential agreement about goals for restoration of ecosystem health in the forests of eastern Oregon. The time is now to move forward on restoration efforts where success is most likely and that have scientific and public support.**

All of the action alternatives propose activities that would restore ecosystem health to various levels. Table 18 ranks the alternatives based on changes to forest and woodland ecosystems from existing conditions, while Table 1 succinctly describes the proposed restoration activities and their effects for all alternatives.

2. **Ecosystem health includes the health of the forests, streams, and watersheds. Achieving and maintaining good water quality and quantity should be a priority for all forest management activities.**
   - **Ecosystem health involves many considerations: biological diversity, soils, water, the processes by which these elements change and interact, and the resilience of the system to disturbances such as insects, disease, fire and flood.**
   - **Historic conditions are an important source of information when developing restoration objectives.**
   - **Extend watershed considerations from headwaters to human communities, and be responsive to both natural and human needs.**

The health of forests, streams and watersheds provided the major impetus for undertaking the Lookout Mountain project. All action alternatives, to varying degrees, proactively address ecosystem health, and have been designed to account for biotic interdependencies, abiotic factors, and the need for ecosystem resilience. All action alternatives except, by some measure, Alternative 4, were formulated with a vision toward restoring historic conditions on the ground. Human and natural needs were considered during the design phase of proposed riparian restoration activities; all action alternatives; improvement of water quantity and quality plays a prominent role in all action alternatives, and the needs and concerns of downstream landowners were abundantly prevalent during the planning process, as described herein.

3. **Ecosystem health may be improved through active management in stands which have suffered from fire exclusion, removal of large trees, and grazing. Understory thinning of green trees to restore forests to a healthy condition more representative of historic conditions is an important component of active management for forest health and can help offset costs. These conditions may be sustained by the periodic use of prescribed fire.**
   - **Land management should mimic natural processes to the extent practicable. Use prescribed fire to restore historic open stand conditions in lower and mid elevation forests that have appropriate levels of surface and ladder fuels.**
   - **Understory thinning, especially when combined with prescribed fire, can mimic some of the effects of natural fire, and prepare the forest to function with periodic fires in the future.**
   - **Thinning and prescribed burns may not be appropriate for higher elevation or cold forest types (except some lodgepole pine) that historically had disturbance regimes based on stand-replacement fires.**

- **Protect old growth stands that were historically maintained by fire, such as pine, larch, and aspen. Understory thinning and burning to remove young trees and inappropriate species can be effective tools to protect these important stands.**
- **Management techniques will likely require financial investments and innovative contracting efforts because the economic value of these thinnings is generally lower.**

Precommercial (understory) thinning and the reintroduction of fire by prescription are activities planned, to varying degrees, under all action alternatives. All action alternatives except for Alternative 5, however, include plans for commercial thinning in old growth stands. This activity, while not necessarily representative of historic natural processes, was deliberately designed to address forest health problems that historically were not present to the degree that they are now, such as mistletoe infestation. The IDT determined that restoration of natural processes would not be successful but for an aggressive treatment approach at the outset of the project. Although economic considerations did not play a major role in the delineation of aggressive treatments in Alternatives1 through 4, it must be noted that these management techniques would reduce the amount of financial investment required to achieve forest ecosystem health.

4. **Be responsive to the diversity of people dependent on forest resources including American Indian Tribes, timber-dependent communities and recreation and tourism sectors.**
   - **A healthy watershed includes healthy communities that share the same geographical areas. Resource management should include strategies that maintain both forest and community health.**
   - **Monitoring communities and cultures is as important as monitoring forest resources.**
   - **Place emphasis on local participation and input that fosters ownership of land management strategies.**

All alternatives were devised in full compliance with NEPA's public participation mandates, and pursuant to consultation with Tribal governments. These alternatives were designed to achieve ecosystem health, and provide tangible and non-tangible resources for surrounding communities and other users. The extraction of forest products that is inherent in each alternative will help support those in the area who rely upon timber harvesting for their livelihood. Monitoring systems were formulated so as to ensure that users are not unduly burdened by project activities.

5. **Plan and implement active restoration first in less controversial areas. In the short run, avoid operating in roadless areas, near fish habitat and old growth areas.**
   - **Carry out active restoration first in areas and in ways of broadest public consensus, develop a track record of success, and then expand agreement and efforts to other areas.**
   - **Give higher restoration priority to areas with relatively high ecological integrity but with values most at risk from threats such as catastrophic fire, severe erosion, invasive species, or crowded understories.**
   - **Healthier ecosystems may benefit from maintenance treatments such as prescribed fire, as well as active restoration of adjacent areas.**
   - **Avoid treating old-growth areas unless they are at risk of uncharacteristically severe fire and understory competition, in which case understory thinning and prescribed fire may be used.**

There are no roadless areas in or around the AA, and the Lookout Mountain project was mapped out so as to preclude infringement upon waterways containing threatened or endangered fish species. The AA contains old forest, and Alternatives 1-4 propose harvesting in these areas so as to improve forest health. However, the BLM has fully analyzed the possibility of not treating old forests, as reflected in Alternative 5.

The forest health objectives that have driven the Lookout Mountain project preclude the establishment of a treatment schedule based upon ecosystem-based controversy. Poor forest, rangeland and riparian health exists virtually uniformly across the AA, and requires sensibly uniform action. For example, while old forest areas are controversial, the old forest treatments designed to reduce mistletoe and insect infestation and the currently high risk of catastrophic wildfire under alternatives 1-4 are integral parts of those alternatives, and would be maximally effective only if undertaken concurrently with forest health treatments in other areas. Instead of staggering treatments so as to build consensus, the BLM's goal is to garner that consensus prior to implementing any project activities, based upon clear ecosystem health needs and the fact that the alternative chosen would represent the best possible balance between all competing issues and uses. Further, the BLM's land management mandate implies that the agency must work toward protecting and enhancing all lands under its administration, rather than just those that are currently healthy. Restoration, by definition, focuses upon lands that are in less than pristine health, and the Lookout Mountain project is designed to aggressively restore lands that currently are in poor condition. As the condition of these lands improves, adjacent lands both public and private will benefit from the overall increased ecosystem health.

6. **Monitoring and learning are essential to the success of ecosystem health restoration activities and will be critical to justifying continuing active management. The Forest Service, the Bureau of Land Management, the research community, Congress, the Administration, the Oregon Department of Forestry, other agencies, and the Governor's Office should join together in assuring that we learn from the management strategies employed to restore ecosystem health.**
   - **A monitoring program for active restoration must include baseline data from which assessments can be made.**
   - **Monitoring is the essential element of adaptive management and should include implementation, effectiveness and validation monitoring.**
   - **Monitoring is the foundation of public acceptance and expansion of consensus on ecosystem restoration. Independent "all party" monitoring helps ensure credibility of the monitoring.**

Monitoring is a crucial element of the Lookout Mountain project, and would be used to ensure that project activities are undertaken as planned, objectives are met, unforeseen circumstances are addressed, and undesired results and impacts are minimized or eliminated. All monitoring would rely upon baseline data collected both before and during project initiation, i.e., data set forth in Chapter 3 of this document as well as information deriving from pre-treatment planning. "All party" monitoring would be implemented in relation to grazing issues, of which permittee self-monitoring is an important tool. Further, the BLM would work with private landowners within the general project area to ensure that their concerns about BLM-initiated treatments are addressed.

7. **Restoration activities and planning should include all ownerships within a watershed, where possible.**
   - **Look for ways that federal and state agencies and private partners such as local watershed councils, soil and water conservation districts, family forestland owner associations and other non-profit can build collaborative relationships and provide funding sources to meet watershed restoration needs irrespective of ownership.**
   - **Conduct watershed assessments and cumulative effects analyses across boundaries.**

Watershed-level and cumulative effects analyses for the entire AA, which includes both public and private land, were conducted in the planning of the activities described herein. The results of those analyses are set forth in the body of this document. Further, the BLM is interested in forging land management partnerships with the appropriate governmental entities as well as private landowners, and has initiated dialogue in order to establish such working

relationships. The landowner outreach described in section 2.2.5.6 is an example of BLM efforts to achieve cooperative management. The agency also is seeking alternative funding from sources that stand to benefit or are interested in the proposed treatment activities.

8. **Active management includes, but is not limited to, cutting trees, riparian area planting, reforestation, prescribed fire, road treatments, stream rehabilitation, and noxious weed management, as well a protection of ecologically sensitive areas.**
   - **Develop restoration strategies that address forest, watershed, and community concerns in an integrated and comprehensive way.**
   - **Combine active treatments with passive approaches, for example managing livestock grazing to allow re-establishment and growth of aspen, cottonwood or other native vegetation.**
   - **Road treatments include fish passage and drainage improvements, closure, decommissioning, obliteration and re-contouring.**

With the understanding that ecosystem components are interrelated and interdependent, the BLM has crafted the treatment proposals described herein utilizing both active and passive management so as to achieve optimal ecosystem health. Steps such as rehabilitating streams and riparian areas years before conducting forest health treatments would ensure that the health of one ecosystem component would not be jeopardized by activities undertaken to improve the health of another component. This integrated approach would delay project completion, but is requisite for the satisfactory achievement of the project's ecosystem health objectives.

All road treatments described in the body of this document have been planned either expressly in order to benefit fish, stream function and riparian health, or have been designed with these issues in mind. It is expected that the proposed road system management activities would result in a substantial net benefit to fish species and riparian areas.

9. **Protecting soils through the use of low-impact, cost effective equipment and techniques is an essential element of restoration.**
   - **Soil protection should be a high priority for all restoration activities. Soil protection involves more than selection of proper equipment. Plan projects to minimize impacted areas and avoid sensitive areas. Pre-designate skid trails and limit activities to seasons when soils are less vulnerable to damage.**
   - **Provide clear direction to equipment operators based on prescriptions that establish a common understanding of soil protection objectives. Monitoring active management impacts on soil is essential.**
   - **Maintain and enhance workforce skills, training, and development to ensure skills are available to deliver the high level of soil protection required.**
   - **Create predictable opportunities to use modern low-impact equipment to increase the likelihood of investment in such equipment.**
   - **Consider incentives that encourage investment in low-impact equipment, including bidding preferences or grants. As acceptance of these practices improves, look for ways to expand their application.**

Soil protection is of utmost importance, and was built into all action alternatives. All skid trails would be pre-designated, and would be sited in areas least likely to result in inordinate soil degradation. Yarding on slopes between 35-70% would be done with front-end suspension systems. Helicopter logging would be utilized in remote areas instead of ground-based logging systems so as to obviate the need for additional skid trails. Slash pile burning would be done only after snowfall so as to minimize damage to soil. All contracted and in-house prescriptions would be monitored actively in order to ensure that impacts to soil are minimized and properly mitigated. BLM and contractor staff physically involved in treatments would be briefed on soil protection prior to initiating treatments. Low-impact

equipment would be used in treatments wherever physically feasible and reasonably cost-effective. Contractors would be informed of BLM preference for the use of low-impact equipment where feasible at the time of bid solicitation.

10. Post-fire salvage logging is primarily an economic activity intended to benefit local communities, but may be compatible with watershed restoration and fuel reduction strategies if consistent with ecosystem health goals.

- **Abundant snags in burned areas can provide important habitat for many species of wildlife.**
- **Soils, particularly in severely burned areas, can be sensitive to disturbance and should receive even greater protection than usual.**
- **Salvage logging can provide economic value and reduce the likelihood of bark-beetle outbreaks. General guidance for such logging should be developed in a way that fosters public understanding and acceptance to ensure prompt implementation and realization of benefits.**

The current project does not entail salvage logging.

11. Where the costs of ecosystem health restoration efforts are not paid for by sale of forest products, funds should be made available to finance these activities on a priority basis. Restoration is a long-term investment that will require support by the public and Congre**ss.**

The proposed Lookout Mountain project would not be self-sustaining on the basis of the sale of forest products, particularly because it is driven by ecosystem health and not by financial considerations. It is expected that funds for the project would derive from the public through Congress, and from cooperative management arrangements with public and private entities. It also is expected that the ecosystem health treatments described in the body of this document would be fully funded within the envisioned time frame. As noted herein, however, some activities that are not aimed at achieving ecosystem health, e.g., improving the Bassar Diggins campground, would be undertaken if and when funding becomes available.

Index

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